TEXTILE BULLETIN

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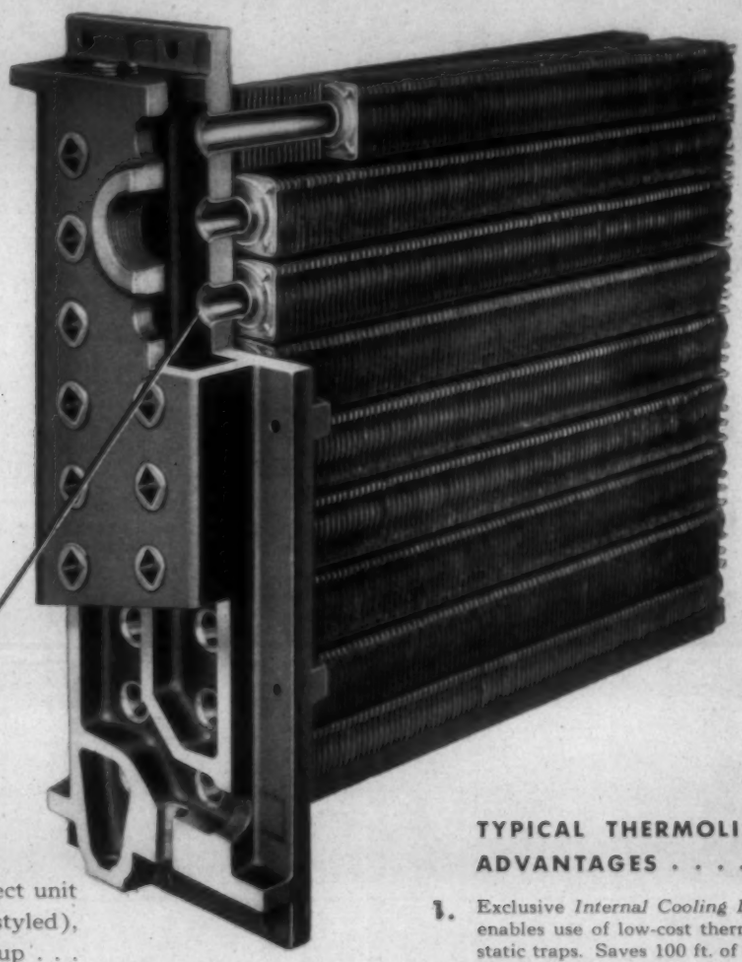

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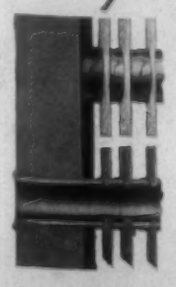

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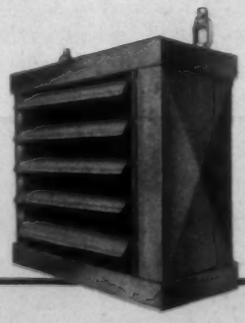

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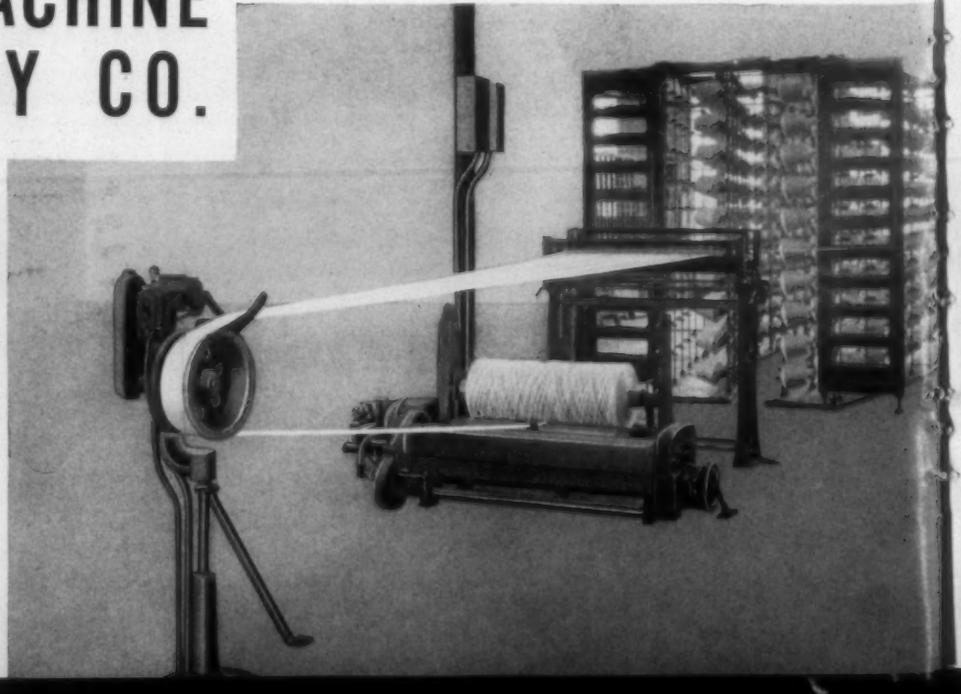

Guest Editorial

WORTH STREET is operating under price controls for the first time in over twenty years. Since June 30th, the normal functioning of a free competitive market has been proscribed by governmental edict for the avowed purposes of insuring stability in the price structure and curbing inflation. While the six groups of fabrics upon which price ceilings have been imposed represented less than 50 per cent of annual cloth yardage produced in 1939, it is understood that an early extension of ceilings to other divisions is contemplated. When and if supplementary orders are issued, the market devoutly hopes that the benefits of recent experiences will be incorporated.

Relatively there has been little opposition to the fundamental idea of putting a stop to the constantly rising price level. Willingness to subordinate trade freedom to the public good has always been a marked characteristic of the cotton-textile industry and the present is no exception. In former crises, however, such as developed during the N. R. A. and A. A. A. days, cooperation of the established industry groups was important in bringing order out of chaos through the perfection of equitable market adjustments. While similar procedure has not been followed in the ceiling orders, the industry has been most fortunate in the selection by OPACS of an Advisory Panel composed of mill and market executives of recognized ability and integrity. As the result of their recent discussions and recommendations, changes made in the initial order on grey goods have translated it into a workable instrument that is generally acceptable in the market.

Two major defects still remain. At no time has the revision of bona fide contracts by governmental decree seemed equitable or desirable in the public interest. Although the procedure has been adopted, the integrity of contract provisions is still regarded as fundamental even under conditions of greater emergency than now exist. An important omission is the failure to synchronize ceiling prices with the major elements of costs, viz., raw material and wages. Should speculation for the rise in raw cotton continue free and untrammeled, with an escalator floor devised by other government agencies, only a succession of new and higher ceilings will relieve the squeeze on the manufacturer whose selling prices are fixed and costs unrestrained.

At this early stage, it would be presumptuous to venture a forecast on all the potential effects of these price controls upon the course of market activities. One result already is the establishment of decimal prices instead of fractional eighths and sixteenths. This has been recommended previously in declining markets. Most likely, concurrence with the ceiling orders will lead to a far broader employment of selective selling and even to some rationing of production by individual firms. The elimination of advances in price except on authorization from Washington will undoubtedly have a restraining effect on long distant contract periods. In the opinion of many, such action would minimize the element of speculation and thus be a force for good. Chief satisfaction lies in the reasonable assurance that full production can now be maintained and that consultation with the Industry Panel will probably precede future developments.

W. Ray Bell, President

The Association of Cotton Textile Merchants of N. Y.

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TEXTILE BULLETIN

Vol. 60 August 1, 1941 No. 11

Management in the Defense Program

By W. M. McLaurine, Secretary and Treasurer

American Cotton Manufacturers Association

INDUSTRY frequently indulges in talking about public relations and at times makes some efforts in this field. There have been pages of paid advertisements in the papers portraying the virtues and values of the industry. There have been essay contests in schools and colleges with scholarship or money awards as incentives for the purpose of educating the public. There have been acres of billboards plastered here and there for the motorists and the traveler to read and appreciate. There have been speeches made and articles written by many men both within and without the industry and still the surface seems hardly to be scratched and the need for a satisfactory public appreciation of the industry still demands further efforts and study.

The efforts that have been made are good but they do not seem to have the public appeal that they might have. These efforts should be the conclusions rather than the beginnings of a public relations program, according to my way of thinking.

Industrial relations and public relations are so closely related that they cannot be separated. In fact, public relations, in my analysis, rest upon sane and sensible industrial relations. Industrial relations ring back into the emotions and imaginations of people and arouse them either for or against an organization or industry.

It is a well established fact that people are motivated more by emotions and imagination than they are by figures and facts. In nearly all of the public relations efforts that have been tried, there has been too much appeal to so-called figures and facts, and too little to the emotions and imaginations. In fact, the stimuli that have been given to the emotions and imaginations have followed the old line of thinking in interpreting the facts and figures set forth.

There is a philosophy of tradition that follows every movement or segment of society. This is difficult to overcome. If the philosophy is good or bad, either condition may be harmful to social progress and correct thinking. If an industrial philosophy has had error in its structure, and in the evolution of its industrial progress, has either corrected its error or improved its philosophy, tradition tends to remember the errors of the old philosophy and not to believe the new philosophy of improvement or correction.

In the same manner, if some movement or segment of society has had a high and holy motivating philosophy at some time in its past, and in social evolution this philosophy has been modified by principles of error and derogation, tradition tends to cling to the high and holy philosophy of its inception and refuses to believe in its changes.

In both instances tradition is unfair and accepts philosophies of error.

Textile Tradition Is Bad

It is needless for me to say that in too much of the public mind the philosophy of tradition in the textile industry is bad. The public reactions to the practices that were once a part and parcel not only of this industry but of all industry are too well known for me to have to record them to prove this statement.

The long hours, the low wages, child labor, the poor working and living conditions, the poor managerial conditions that once pervaded certain sections of industry wrote themselves indelibly in the hearts of the great public. Books, articles and laws were written on this subject, so repugnant in many places were they to the public.

It is not necessary for me to go into a discussion as to the cause or righteousness of any of these policies because they have all passed in most organizations and are gradually passing in the few remaining organizations that are slowly seeing the light. The industry by and large is now in a new days of approved business ethics and practices, about which, if the public were fully informed, would remove these old stigmas which still hover over industry like black shadows. These bad conditions all existed once and they built a philosophy for tradition—a philosophy which gave to industry a bad name, and its managers a bad reputation.

It is not for me to defend or deny these statements. I am only trying to state facts that once existed and in many public minds still exist. The song has ended but the melody lingers on. I am a member of the public group, in this discussion, reflecting as best I can what we think of you and what we expect of you in order that we may put our stamp of approval on you.

When I use the term public, I mean that opinion which finally dominates social thinking. I am excluding certain types and groups that may think otherwise. I refer to the great voting public that reflects the public opinion that dominates and thus controls public sentiment, public acceptance or rejection of ideas.

Public Watches Industrialists

As ignorant as the average industrialist may think the public is, and as intelligent and important as he may think he is, the public in constantly watching him from two points of view; how does he make his money, and what does he do with it after he makes it?

The answers to both of these questions are deeply set in industrial relations and public relations. Most people, and particularly the public, are not interested in money *per se* but in the uses of money.

The lasting monument to Commodore Vanderbilt is Vanderbilt University. No one worships Vanderbilt as a money-maker but as a final devotee to the educational progress of the South. Carnegie was dead and hated publicly when he had an income of millions of dollars per year oppressing the coal miners of Pennsylvania and elsewhere. He was resurrected by the Carnegie Library System, the Carnegie Foundation and other benefactions to humanity. Mr. James B. Duke will not go down in history or memory as a great financier or industrialist but as a great benefactor in the cause of education and his interest in the sick and disabled. Mellon will be remembered by the Mellon Institute and the Mellon Art Gallery in Washington.

The point that I am trying to put over to you is that the public mind may seem sluggish and indifferent but it has a keen intuition as to human relationships. This means that in our public relations appeal we must stir the emotions and imaginations of the people with the positive proof of the fact that we have an industrial philosophy in keeping with their expectations of us, that the philosophy of tradition is wrong, that we now have a philosophy in keeping with their desires. If we do not have this philosophy, we cannot convince them.

This may seem to you to be a rather remote treatment of my subject, "Management in National Defense," but from my point of view, I am on the subject. It is in this public and industrial relations field that management must work.

No One Cause of Strikes

In Walter Lippmann's syndicated article on Monday, April 7, 1941, he cited three conflicts between labor and management—the coal strike, a conflict in a highly unionized field; the Ford strike, a conflict in an open and ununionized field; the Allis-Chalmers strike, a conflict in which the entire machinery of labor legislation and New Deal philosophy was used. These three conflicts negate any preconceived idea as to whether unionization, open shop or legislation is a cause for conflict. I quote:

"We must look not at labor policy as such or the machinery of adjustment as such but at the state of mind of men and of communities, and we shall conclude, I believe, that where there is trouble, there is no full conviction that the national emergency is real, no urgent belief that nothing matters but the progress of national defense. Any policy can be made to work among men who believe that the security and independence of the nation are at stake; they will lay aside everything else as soldiers lay everything else aside, they will compromise and adjust their difficulties because they feel themselves enlisted in the common cause.

"But where this conviction does not exist, where men do not believe the nation is in jeopardy, where they are disposed to think that the defense effort is hysterical warmongering, there is neither the spiritual incentive nor a good reason for subordinating all their other views and interests to the nation's needs."

There were weak industrial relations programs here. The weaknesses caused the conflict.

The trouble seemed to be that the managements of Ford, the coal industry, Allis-Chalmers and labor in their egocentric planning failed to recognize that present-day conditions are different and demand a different approach. Each party on both sides in the three conflicts was trying to conduct his business as if conditions were normal and all seemed to have overlooked the National Emergency in their partisan philosophies of self-interest and all had failed to impress upon themselves and their employees the necessity of winning the war and then working out the problem of normal industrial relations. The sympathizers of both labor and management were rather disgusted with the attitudes assumed by all parties to these conflicts. The point that I am trying to emphasize here is that the public thinks and has very definite ideas on industrial disputes. It expresses these ideas at the voting precincts.

Since this was written these strikes have been settled and we hope on a basis of permanent understanding. No plan is any stronger than the desire for execution.

There is a great lesson in the above statements. Management of men and management of labor had failed in these instances to change their policies or to modify their ambitious leaderships, so that these conflicts would not have been necessary. I would like to make it stronger—could not have occurred. The breach in philosophies between management and labor was too great for either to understand and co-operate with the other. There should be no breach at any time between labor and management. Each should thoroughly and tolerantly understand the other and both should work in co-operation and concord, particularly in a Program of National Defense. This is the great responsibility of management of industry and leadership of labor today and I trust that it will so impress itself upon the parties so responsible that it will always abide.

Management in Position of Authority

Management is in a position of authority and power, hence it cannot occupy a neutral position. It will be honored and respected and followed or it will be hated and challenged in industrial conflict. This means an intense industrial relations policy of education of aims and ideals, of national needs, of purposes and plans of mutual understanding and co-operation. The great rank and file of the people of America no longer want one man to plan out their lives and hand it to them. They want to know what and why and how. These conflicts are divisional in their class influence. There are nearly 50,000,000 people in this nation employed in jobs—industry and service. There are more voters in their ranks than there are in the ranks of management. These people today carry and

form the public opinion of America more than do the managers. For my part, if I wanted to have a constructive industrial idea promulgated and fastened in the mind of the great American public, I would rather have this idea advanced by labor than management. It is not necessary to have just one group. There are problems and policies that must employ the minds of both.

Thus you can see the emphasis that I place upon industrial relations as a basis for public relations. The policy of industrial relations rests upon management and its results are finally placed on his desk.

The point that I keep trying to emphasize is that we have the minds, the men, the machines and the materials to make everything in the National Defense Program effective, hence these human factors as producing agents must be kept properly related. These factors are the bottle-neck through which raw material passes to become defense materials, hence there must be no conflicting cork placed in the bottle.

The great cry in the National Defense Program has not been for raw materials or a serious criticism of the products made. The one disturbing factor has been strikes and the slow down of production. This would seem to indicate that the chief function of management in the Defense Program is to install and maintain a harmonious and workable industrial relations program. The handling of men under military rule is one thing; the handling of men under the program of American free enterprise is another. I am glad that it is, and I hope it will always remain so.

In thinking of an industrial relations program, the average manager or labor leader sometimes thinks too narrowly. He often thinks of it in terms of himself and his plans—to put it plainly and bluntly, he thinks of it sometimes to his own advantage and the way that he personally wants it to work.

There are more factors than *management* in an industrial relations program. There is the factor of *labor*, the factor of the *public*, and in the present situation there has entered the *emergency of National Defense*.

Even in working out an industrial relations program, the management or labor leader may consider all of these factors and then use his own mind to interpret what he considers will satisfy all parties. Such an approach and such a program might be satisfactory but the chances are that they will not work well. It is extremely difficult to divest one's self of his own philosophy and environment and place himself in the personality of another. It takes a man of broad experience and a very sympathetic understanding of human nature to do it. I do not say that it cannot be done, but I do say that it is extremely difficult to do.

As I have said before, management is in control—in the place of power. Power is dangerous for anyone. Labor has been weak—it has been in the "yes" position. Now, in certain fields, labor has been organized and has power. The coal industry is an example of this statement. Labor leaders and their unions now have power and they will abuse it if they are not careful. We think that labor in some instances already has used its power to the detriment of itself and society.

The power of labor and the power of management must be unified. They must not work at cross purposes and develop conflicts. There is a reasonableness in all matters and this must be sought for with intelligence and tolerance. The power of destructive force has no place in a democracy or in any of its subdivisions. The powers of dutiful obligation and dutiful obedience to an inner urge of righteousness and well being are the ideals that must prevail.

Public Is Umpire

The public is the umpire that makes the decisions and when its public edicts or opinions cannot or will not be obeyed, the court of final resort is law and compulsion. The rights of free people are annulled when they (the people) cannot be trusted in their execution.

Industry has had its restrictions because the public did not approve of some of its policies. Labor now is exuberant and wild in its new magna carta. Unless it can prove its ability to handle its responsibilities, they will surely be curtailed or controlled by law.

The managers of industry and the managers of labor must meet these new problems and solve them. The privileges and practices given to labor under the New Deal Administration were given with the approval of the public. The point that I am trying to emphasize here is that both labor and management must consider public reaction to any plan that they may propose. The public will finally approve or disapprove and do so in such a way that it can be easily and clearly understood. Management must not forget that industry is a privately owned enterprise only insofar as stock and physical equipment are concerned. Every industry is a social and economic asset or liability in the section or nation in which it is located. It has an influence on the social and economic welfare of a community much larger than that of its employees. For this reason the public jealously watches its policies and their influence on the community. When these policies are good the management is accorded public approval, public protection and social and economic recognition. When these policies are bad the reverse is true. These same statements apply to labor and labor leadership.

A publicly approved industrial relations policy is the first and basic step in a public relations program. Public approval by the community of workers engaged in the industry is one-half of this step and public approval of the citizens who are not workers, but who live within the area or section in which the industry is located is the second half of the step toward the larger public relations program which is encumbent upon management to display.

I taught school for twenty years. I was a manager of some large educational factories. My teachers were my foremen and my pupils were my employees. I watched my factory carefully. I watched my employees carefully. I tried always to maintain policies that would bring out the best in them and to cause them to work from a sense of duty for themselves and not for me. I tried never to let a day close with any unfinished business in human relationships pending. I did not work for community approval except indirectly. I was keenly sensitive as to what my employees thought of me because I knew that one thousand boys and girls in that community were more influential than the School Board. I knew that if my name or my policies were ever in question that the pupils' point of view and judgment of me would be worth

(*Continued on Page 37*)

Recent Developments in Synthetic Fibers and Fabrics*

By Harold DeWitt Smith

Textile Technologist

The A. M. Tenney Associates, Inc.

TO ALL of us who are preparing for or, at present, are engaged in one or another phase of the textile industry, the study of recent developments in the field of man-made fibres and the yarns and fabrics made therefrom is imperative. In addition to the constant stream of news items and scientific articles on individual members of the man-made fibre family, several able surveys of recent developments in this sphere have appeared.

For example, the December, 1940, issue of *Industrial and Engineering Chemistry* contains all of the papers which were given at a Symposium on New Textile Fibres held at the Detroit meeting of the American Chemical Society, in September, 1940.

At this opening session of the Rayon Institute, I would like to present not merely another compilation such as has been so adequately and so recently done, but rather to use the current developments in the field of man-made fibres to illustrate a far broader theme, namely: *the impact of the man-made fibres on textile philosophy and on textile technology.*

I. Textile Philosophy Under the Impact of Man-Made Fibres

At such a time as this in the history of the world we tend to become completely immersed in the present and so lose our perspective. It is more than ever necessary to remind ourselves that the span of a human life is but an instant in the evolutionary scale of history. To understand and to cope with the problems of *this* moment, we must withdraw somehow from this moment to a more objective observation point from which we can examine facts and forces, and the processes of the human race's mind and thus see in truer perspective the course of the stream of human progress.

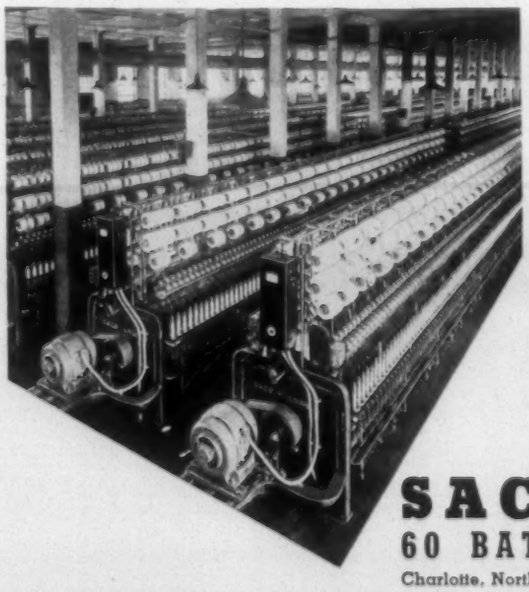
Most of you students at the Textile School were undoubtedly born since the close of the first World War, or let us say about 1920. If we lay out a base line of years on which to chart the history of textiles using a scale of one foot per century, your life began about 2½ inches to the left of the right end which represents the present. This date, by chance, corresponds to the moment in history in which rayon, then called artificial silk, shook off the hesitant pace of its experimental infanthood and struck out along the vigorous upward trend which has carried it to the point where it now shares with wool the third place among the world's textile raw materials. World consumption of each was about 2¼ billion pounds in 1939. Wool and rayon are exceeded in amount consumed only by cotton and jute.

The advent of the first commercially successful rayon, invented by Chardonnet in 1884, is 4½ inches further to the left. The first synthetic dye (1856) is 5 inches to the left of rayon's birthdate. The application of power to spindles and looms, which ushered in the industrial revolution and transformed the manufacture of textiles from a home craft to a factory industry, centered about the middle of the 18th century and is, therefore, approximately two feet from our 1941 line. Before this, the history of textiles reaches back through modern and medieval Western Europe, whose cultural life began at the close of the Dark Ages, let us say about 1000, or about nine feet from the present; back through the power of the Roman Empire which we can place at the beginning of the Christian Era about nineteen feet from now; back through the intellectual glory of Greece which flourished in the closing centuries of the pre-Christian era (we can mark it at 500 B. C. or about twenty-four feet from the present); back farther to the Egyptian civilization and the culture which centered east of the Mediterranean as early as several thousand years B. C. (fifty feet from our starting line); back, in fact, to the earliest records of civilization as revealed by the spindles and needles and loom weights which have been found among the oldest relics of man in Asia and in the Swiss lake dwellings. The record is lost in the haze, but the making of textiles probably goes back at least 10,000 years, or 100 feet on the chart which we are laying out.

Once man had learned to weave baskets and fish nets from vines and reeds, once he had learned to spin hair

*Address delivered at the opening session of the recent Rayon Institute at the Textile School of N. C. State College, Raleigh, N. C.

Could You
compete in a
PRICE CONTROLLED MARKET
with your present
operating costs



Price control, however disturbing to the textile industry, will be less serious to some mills than to others. For even though a ceiling is fixed on prices . . . and profit margins "based on what the *average* mill can do" . . . progressive mills will be in a more advantageous position to maintain their earnings through increased production and sales.

In the mill where modern, efficient and dependable equipment is in operation – where waste, lost production and spoilage are at a minimum—price control will not be a complete handicap to profits.

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and wool fibres, and later vegetable fibres, into yarns for finer, more supple textures than the reeds and vines provided, he was embarked upon a search for textile raw materials which has never ended.

Most Fibers Known 1000 B. C.

Comparatively early in history, certainly before 1000 B. C., or beyond the thirty-foot line from the present, he had discovered and mastered the processing of wool, cotton, flax, and silk and had devised a separate technique and special equipment suited to the distinctive properties of each of these natural fibres. Jute and hemp, the other two commercially important natural fibres, also had to be handled in distinctive ways, but since their utility is less general than that of the first four, we shall limit our discussion principally to these.

The primitive but distinctive hand technique of processing each natural fibre have been perpetuated by development into the highly complex machines in our modern mills. That the characteristics or "personality" of each fibre has dominated textile men's thinking is evidenced by the fact that we have not simply spinning machinery, but cotton machinery, woolen and worsted machinery, linen machinery; not just looms, but cotton looms, worsted looms, silk looms. The textile schools themselves have of necessity perpetuated these distinctions by classifying their courses by fibres, except for the courses in chemistry and dyeing.

In other words, through thousands of years of slowly developing civilization and culture, man found but a half dozen important fibres and of these only four were suitable for a wide range of household and apparel uses. Each of these four possesses a combination of properties which gives it an individuality both from the standpoint of processing, i.e., cleaning, drafting, spinning, and weaving, and from the standpoint of the texture and utility of the finished fabric.

The properties of each of the fibres have remained essentially fixed and immutable throughout the ages. True, by careful breeding of sheep, man has produced finer wools. By equally careful breeding of silk moths, he has produced longer, finer, and somewhat more uniform filaments. Similarly, the cotton grower has increased the length of cotton staple from ¾ inches, or less, to 1½, and even two inches, and by good fortune the longer fibres are also finer in diameter. Flax yield and fibre quality has also been improved by cultivation.

Fibers Still Essentially Same

But these are relatively minor changes. They have not altered the essential character of each fibre. Cotton is a flattened, twisted hollow tube, whether it be Bengal from India, or Sea Island from the West Indies. Man has bowed before its idiosyncrasies and learned to fashion it into the greatest variety of fabrics made from any one textile fibre, ranging from heavy duck to filmy muslin.

Wool, whether from a Mongolian sheep in China or from an Australian or American Merino, is a shaft composed of spindle-shaped cells covered with a sheath of shingle-like scales. It has remarkable elastic properties, a round to elliptical cross-section and a tapering tip. Man has learned how to use its annoying tendency to shrink and compact into a dense mass of fibres in the making of felts and in the fulling of worsted goods; he has learned to utilize its elasticity and crimp to provide warmth in the porous texture of blankets and clothing. But always, he must work within the limits imposed by the "wool-like" characteristics of all wools.

The silk worm has been bred as carefully as a strain of race horses to insure larger cocoons, more uniform and finer filaments. Yet, the reeling must be done carefully so as to average out the gradual change in fineness from end to end and thus reduce "rings" in hosiery and bands in woven goods. Man throughout the ages, since the legendary Chinese Princess first tended her silk worms, has used silk for luxurious fabrics and has learned to display its lustre and suppleness to best advantage, but the silk weaver's craftsmanship has always been circumscribed by the limiting properties of silk.

Rayon from the date of its birth to the early 1920's was made by man in silk's image. Its sole reason for existence was an an imitation of silk. Therefore, throughout this 99 feet and 10 inches along which we have laid out the history of textiles up to the debut of rayon, the philosophy of textiles has rested on the fixed qualities of a few natural fibres. *All man's textile thinking has been centered on how to cater to these particular properties in processing the fibres and how to create the fabrics and textures desired within the limits imposed by these fixed qualities. All man's judgment of textile quality and textile performance has of necessity been measured against these four natural fibres as standards.*

You young men were born into a new era of textile philosophy which is just now beginning to be comprehended. You are witnessing the impact of a new idea on the human mind. Not simply the idea of *making* textile fibres instead of harvesting them from Nature, but the idea of *creating new kinds of fibre* with new and distinctive properties.

The imitative concept of making fibres in the image of the natural fibres goes back at least as far as 1664, when Robert Hooke suggested it in "Micrographia." The continuous filament rayons have been developed to produce silk-like fabrics; nylon has been developed to produce silk-like hosiery; the rayon staple fibres have been developed to produce linen-like, worsted-like, or wooly types of fabrics.

During recent years (the years since you students began to think of textiles as a career), it has become more and more evident that these man-made fibres have many characteristics which are distinctive from the natural fibres. This is the new philosophy of textiles which, after 10,000 years of preparation, you men have been born to inherit. *You are entering an era in which textile fibres will be "made-to-order" to suit particular needs and purposes.*

One of the principal tasks which you have before you is to work with the research physicists and the rayon chemists to determine the properties desired in a fibre for a specific use.

In the manufacture of fibres, the choice of fibre substance and the mechanism of fibre formation determines the basic physical properties such as strength, elongation, elasticity, resilience, color, refraction index, fibre cross-section, fibre surface, fibre dimensions. Many of these, such as lustre, strength, cross-section, and dimensions, are

(Continued on Page 31)

"*We use* GULF LUBRICANTS to Insure Long Low-Cost Service from These New Warpers" . . . *Says this Overseer*

"We carefully maintain our equipment by following a Gulf engineer's recommendations to the letter."

"WHEN our new warpers were installed," says this Overseer, "we took action to insure long life and low maintenance costs—we called in a Gulf engineer and adopted the lubrication practice he advised. We knew from experience that a Gulf engineer recommends the proper application of just the right lubricant for every moving part."

This mill, like many others, realizes definite benefits from the use of Gulf quality lubricants and Gulf Engineering Service. They find that good lubrication pays dividends!

Are you entirely satisfied with the operation of your mill—with your production and repair costs? Ask a Gulf engineer to make a survey and give you his recommendations for the proper lubrication of each unit of equipment. His recommendations are based on sound knowledge and broad experience in the field.

The Gulf line of more than 400 quality lubricants is quickly available to you through 1200 warehouses located throughout 30 states from Maine to New Mexico. Write or 'phone your nearest Gulf office today.

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GULF OIL CORPORATION • GULF REFINING COMPANY • PITTSBURGH, PA.

Lighting Cost in Your Plant

By N. L. Neuman*

TO numerous operators of various industrial plants, the question of lighting cost is answered by cost of lamp bulbs. In the opinion of many, the cost of the lamp bulbs determines the cost of light, and the cheaper that a lamp bulb can be purchased, the cheaper will be the cost of light.

Obviously, however, this thought is grossly erroneous, as the cost of lamp bulbs is only one incidental cost in the total cost of lighting. It is necessary to take into full consideration how much light—what percentage of the total produced by the equipment in use—is actually reaching the work area.

Work area, or work plane levels, necessarily vary with the type of work that is being done. The thing to consider primarily is that the position at which the work is done, the level at which the operator of a machine, etc., has to see what he is doing, is the work plane in that particular application.

Just as cotton is purchased by the pound, oil by the gallon, coal by the ton, wheat by the bushel, lumber by the board-foot, etc., there is also a "measure" of light.

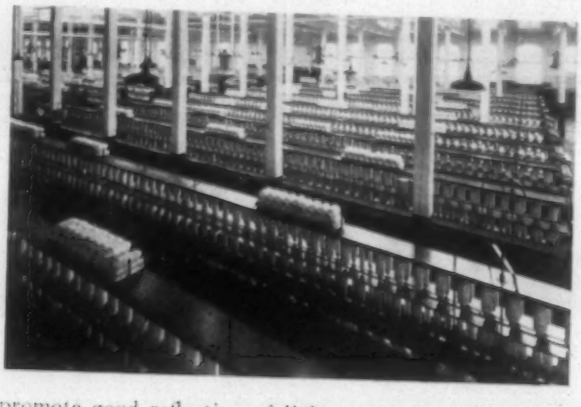
Light is measured by the "foot-candle"—and we are interested in the "foot-candles" of light intensity actually received at work plane levels from the source or sources delivering the light to the work plane level.

There are various instruments for measuring various things. Scales determine weight; linear measure determines length, width, etc. In like manner, the instrument that measures light intensity is called a "photometer," or "light meter," or a "foot-candle meter." This instrument registers the intensity at the point in question, from the source or sources delivering the light to the area.

Using, therefore, the number of foot-candles of light that reaches the work-plane level as a yard stick, we can start to determine the cost of LIGHT. But, first, it is necessary to determine the cost of lighting.

In modern plants, some method of light control is in use. This usually is done by means of reflectors. When these are in use, the reflectors and outlets have to be placed in proper position in relation to each other, to provide proper distribution of light and to maintain as uniform an intensity on work-plane levels as possible. Even lighting prevents harsh shadows, and eases the "seeing" of the task to be accomplished.

The reflectors used in modern plants are usually of a high grade type, with a good white porcelain lining, to



promote good reflection of light and these reflectors are so shaped as to control the direction of light in the best desired directions. To get maximum light from these sources—to get "maximum efficiency" out of the combined luminaire which is the combination of the reflector and lamp bulb, it is *essential* to clean the reflectors *regularly* and *often*. This should be done by preferably using removable reflectors, and taking down the reflectors, washing them with hot water and soap, rinsing them in hot water, and drying them thoroughly before replacing them for use. In most conditions, unless reflectors are thoroughly cleaned at least once each month, the accumulation of dust, dirt, vapor, smoke, etc., will cause a film on the reflector surface which will cause a loss of up to 50 per cent of the light paid for, thus doubling the cost of light delivered.

The reflectors used in plant lighting contribute to the total cost of lighting. This, because the initial cost of these fixtures has to be considered, the ammortization

(*Continued on Page 30*)

*Lighting Sales Engineer, Wabash Appliance Corp.

Slaughter Machinery Co. Will Represent Blickman in South

S. Blickman, Inc., of Weehawken, N. Y., announces the appointment of the Slaughter Machine Co., Charlotte, N. C., as representative for the sale of Blickman stainless steel textile dyeing equipment, effective July 1, 1941.

Slaughter Machine Co. will cover the States of Virginia, North Carolina, South Carolina, Tennessee, Georgia and Alabama.

New Working Arrangement Between U. S. Institute and Textile Foundation

The new working arrangement between the Textile Foundation and the U. S. Institute for Textile Research is actually in operation. Under the direction of Edward T. Pickard, now joint executive officer of the Foundation and the Institute, plans are being laid for the aggressive prosecution of a real research program.

Latest developments include:

1. Fessenden S. Blanchard, of Pacific Mills, newly-elected president of the U. S. Institute for Textile Research, has appointed as a steering committee for the Institute the special committee which developed the plan, composed of Mr. Blanchard, Mr. Pickard, and Dr. Robert E. Rose, of E. I. du Pont de Nemours & Co., a vice-president of the Institute; Dr. Harold DeWitt Smith, of A. M. Tenney Associates, treasurer of the Institute, and Douglas G. Woolf, editor of *Textile World*.

In his letter to members of the Institute, advising them of the appointment of this committee, Mr. Blanchard said:

"This committee will attempt to work out a long-run research program on which suggestions from leaders of the industry will be asked. The committee will, of course, appreciate greatly any suggestions from our members for work in the fields of technical, scientific and business research. The committee will also accept the aid of a special committee to study whatever revisions in the By-laws may become necessary in order best to conduct and finance this research and carry out the purposes of the new plan."

Co-operating with the steering committee, on all matters affecting both the Institute and the Foundation, will be a special committee of the latter composed of Franklin W. Hobbs, president of Arlington Mills and chairman of the Board of Directors of the Textile Foundation; and Frank D. Cheney, of Cheney Bros., and Donald Comer, of Avondale Mills of Alabama, both also directors of the Foundation.

Referring to the new working arrangement between the Institute and the Foundation, Mr. Blanchard stated: "I am confident that all the members will feel that the new arrangement is greatly to the advantage of our organization as well as to the advantage of the Textile Foundation, and through both groups to the textile industry and the public which it serves. With the co-operation of our members and the increased support from the industry which we hope to obtain, we are certain that real progress through textile research will be made."

2. A committee on publications and publicity has been appointed consisting of Douglas G. Woolf, editor of *Textile World*, chairman; Earl Heard, Dean of the Philadelphia Textile School; Dr. Louis A. Olney, of Lowell Textile Institute; Dr. E. R. Schwarz, of Massachusetts Institute of Technology; and Stanley B. Hunt, of the Textile Economics Bureau. This committee will not only decide the form of the organ which will replace the bulletin *Textile Research* at the end of the fiscal year, but will also be responsible for the publicity and promotional program reflecting to the industry at large the research accomplishments of both the Institute and the Foundation.

3. The Research Council of the Foundation, under the chairmanship of Dr. W. D. Appel, of the National Bureau of Standards, is working closely with the steering committee in the development of long-range research plans.

It is hoped that a definite program covering all these points will be in shape for submission to the members at the annual meeting in November.

Cotton Cloth Production and Cotton Consumption At New High Levels

Cotton-textile production this year is running at an annual rate well above 11,000,000,000 square yards, the greatest production in the history of the industry, according to estimates which have been made by the Industry Committee of the Association of Cotton Textile Merchants of New York, of which Gerrish H. Milliken is chairman. Previous high records were 9,593,557,000 in 1940 and 9,445,914,000 in 1937.

The industry's efforts to meet the demand of the Defense Program have been an important factor in the increase in cotton-textile production in the last year, Milliken stated. It is estimated that directly and indirectly more than 20 per cent of present production will go into the National Defense effort.

Cotton consumption is also at new high levels, and it is estimated that more than 10,000,000 bales will be consumed this year, as compared with a normal average of around 6,500,000 to 7,000,000.

Department of Commerce figures show plainly the result of the pressure upon the industry to meet defense demands. Taking full operation of all existing spindles 80 hours per week as rated 100 per cent capacity, these figures indicate that in May, 1941, the industry was operating at 121.8 per cent, as against 89.4 per cent in May, 1940, and 81.4 per cent in May, 1939.

Last month the industry reported 1,372,000 idle spindles, the smallest number in the history of the Department of Commerce figures. It compares with 3,670,000 in May, 1939. A recent State-by-State survey indicates that practically all of the inactive spindles are in partially dismantled mills or mills recently in liquidation.

"Several factors have entered into the present record rate of production in the cotton-textile industry," Milliken stated. "Three-shift operation and overtime operation are raising production over the industry generally; three-shift operation is often uneconomical, and for overtime operation labor is paid time and a half. Some high-cost mills which have been out of production for years have been enabled to resume production by current price levels. Increased margins during the early month of this year are of course responsible for the ability of the mills to raise their production through such measures."

Community Center At Bibb Dedicated

Columbus, Ga.—A beautiful new building, which will serve as auditorium, gymnasium, library and club center for the Bibb City personnel of the Bibb Mfg. Co., has been completed here.

Te be known as the Comer Auditorium, it is being dedicated to the memory of Edward T. Comer, who was a moving force in the affairs of the Bibb Mfg. Co. from 1900 to 1926, when he resigned as chairman of the board of directors after having served as director, vice-president, and president during the 26-year period.

Insurance Co. Makes Offer for Hunter Co. Assets

Greensboro, N. C.—The Jefferson Standard Life Insurance Co. of Greensboro has made an offer of $750,000 for the remaining assets of Hunter Manufacturing & Commission Co., it is announced.

The Hunter Co. was at one time the country's largest commission dealer in cotton goods. It has been in voluntary liquidation since 1933. The offer is subject to court confirmation.

The court's approval is asked by Donald Comer, W. W. Stewart, George W. Mountcastle, I. F. Craven, T. D. Dupuy, and R. D. Douglas of the liquidating trustees who express the opinion the offer is a fair one. While common stock has no right under the liquidating plan, dividends amounting to 10 per cent have been paid to preferred stockholders since beginning of liquidation and other indebtedness of $4,000,000 has been fully met. It is said that approval of the sale will make possible additional 21 per cent payment to preferred stockholders.

Holdings of the Hunter Co. include 4,000 shares in the Pomona Mfg. Co., Greensboro; 4,797 and two-third shares in Mooresville Cotton Mills, Mooresville; a $600,000 second mortgage bond on the Mooresville Mill; 500 shares in Itasca Cotton Mfg. Co., Itasca, Tex.; 541 shares in L. Banks Holt Mfg. Co., Burlington; ten 1,000 certificates of deposit for Seaboard Air Line Railway bonds, and a number of notes.

Mill News

RANLO, N. C.—A. M. Smyre Mfg. Co. are installing four new Saco-Lowell combers to replace 12 old machines.

ROME, GA.—With Robert & Co., textile and industrial engineers of Atlanta, Ga., in charge of the plans, the Anchor Duck Mills of this city have begun the construction of an addition which will measure 100 feet by 55 feet. It will be two stories.

GASTONIA, N. C.—Trenton Cotton Mills have replaced 18 old style combers with six new Saco-Lowell combers. Production from four of the modern machines is said to be equivalent to the production on 18 of the old machines.

ANDERSON, S. C.—A number of new X2 Model Draper looms are now being installed in the plant of the Orr Cotton Mills here. The plant is listed in textile directories as having 70,128 spindles and 1,732 looms. The product is print cloths and broadcloths.

UNION, S. C.—F. G. Kingsley will be president and R. Milliken will be treasurer of the woolen dress goods mills which will be installed in the buildings of the former Excelsior Mills and use that name. All of the equipment of 2,160 wool spindles and 60 looms will be new.

PALMETTO, GA.—Contract for construction of an addition to the Palmetto Mills in this city has been awarded to Tri-State Construction Co., Atlanta, on that firm's bid of $17,268.

Plans for the project were prepared by Robert & Co., of Atlanta.

STANLEY, N. C.—Work will begin at once on a 100x200-foot two-story addition to Stanley Mills, Inc. J. E. Sirrine & Co., consulting and designing engineers, of Greenville, S. C., announced that the contract for this work has been awarded to Herman Sipe & Co., of Conover, N. C.

BILTMORE, N. C.—A new 80,000 pounds per hour boiler purchased from Foster-Wheeler Corp. has recently been installed in the existing boiler house at the Sayles-Biltmore Bleacheries, Inc. A new multiple retort stoker purchased from the American Engineering Co. was installed at the same time. This is part of the extensive modernization program totaling upwards of a half-million dollars planned by J. E. Sirrine & Co., consulting and designing engineers for the Sayles-Biltmore Bleacheries. The additional capacity obtained by these improvements will be used to step up defense production.

GASTONIA, N. C.—Additional spindles have been installed recently in the Gastonia plant of the Ranlo Mfg. Co., which has been acquired by the Burlington Mills group, bringing the total number of spindles up to approximately 15,000. Additional spindles have also been added at the Ranlo plant of the company. These plants are engaged in the production of spun rayon yarns.

ALABAMA CITY, ALA.—At the Dwight Mfg. Co. contracts have been let for the fire protection and elevators according to an announcement by J. E. Sirrine & Co., engineers.

The Georgia Sprinkler Co., of Atlanta, was awarded the contracts for inside and outside fire protection installations. General Elevator Co., Atlanta, received the contract for two new freight elevators.

ANDERSON, S. C.—Contracts have been let for a cloth room extension and a cloth storage building at the Appleton Co. plants at Anderson. The cloth room extension will be 60x130 feet, two stories high, and the cloth storage building will be a separate one-story unit 60x150 feet, according to J. E. Sirrine & Co., engineers.

COLUMBUS, GA.—D. A. Turner, president of the Eagle & Phenix Mills, has announced that contract has been let to the Williams Lumber Co., also of Columbus, for construction of a four-story addition to their mills.

J. E. Sirrine & Co., who are engineers for the Eagle & Phenix Mills, explained that this work, which includes alterations to the present mill, is part of a program of modernization and extension for the defense effort.

The new mill will be of reinforced concrete with brick walls and metal doors.

HILDEBRAN, N. C.—Herman-Sipe & Co., Hickory, N. C., contractors, have been awarded the contract for building a new structure at Hildebran to house a new yarn and cordage plant for the recently-organized concern known as the Quaker Meadow Mills, Inc. The building is due to be completed in about four months.

Authorized capital of the new mill is $600,000 with $30,000 subscribed. Bascom B. Blackwelder, H. C. Lutz and C. V. Cline of Hickory are listed as the incorporators. Mr. Blackwelder will be president and treasurer.

ANDALUSIA, ALA.—Four Diesel engines and two electric generators will be installed at the plant of the Alatex (Alabama Textile Products Corp.) as soon as a building can be put up to house the new plant. The Andalusia Development Co. has the building contract. Addition of the power plant will enable the company to help eliminate the power shortage and at the same time keep employees in this factory employed on full time.

Personal News

B. D. Snow is now overseer of carding at Avondale Mills, Alexander City, Ala.

O. W. Bryant has been made superintendent of the Cherokee Mills, Acworth, Ga.

W. H. Grant is now office manager at the Ranlo Mfg. Co., Ranlo, N. C.

C. G. Bramlett, Jr., Auburn graduate, is now cost accountant at Avondale Mills, Alexander City, Ala.

Mrs. K. D. Fowler is now manager of the Cherokee Mills, Acworth, Ga.

Edwin Hutchinson, secretary of the American Yarn & Processing Co., Mount Holly, N. C., has been elected mayor of Mount Holly.

J. O. Corn, formerly superintendent of Pacific Mills, Columbia, S. C., is now superintendent of the Jackson Mills No. 2, High Shoals, N. C.

Freeman Cooley has been promoted to the position of overseer of spinning at Avondale Mills, Alexander City, Ala.

J. A. Gorham has resigned as superintendent of the Cherokee Mills, Acworth, Ga., to accept a position at Burlington, N. C.

D. S. Blois, secretary of the Southern Mercerizing Co., Tryon, N. C., has resigned to become secretary of the Green River Mills, at Tuxedo, N. C., effective August 1st.

Otis Chase has been promoted from second hand to overseer of spinning at the W. A. Handley Mfg. Co., Roanoke, Ala.

Rush Ray, formerly with Alabama Mills Co., Dadeville, Ala., is now master mechanic at Avondale Mills, Alexander City, Ala.

F. G. Tapley, formerly with Avondale Mills, Sylacauga, Ala., is now superintendent of the Prattville Cotton Mills, Inc., Prattville, Ala.

J. W. Patten has been promoted from loom fixer to second hand in the weaving department at Avondale Mills, Alexander City, Ala.

W. Lexie Davis, superintendent of the Edna Mills Corp., Reidsville, N. C., has been elected a director of the Reidsville Chamber of Commerce and has been appointed a member of the executive committee.

J. F. Armstrong has resigned as overseer of carding and spinning at the Raeford (N. C.) Cotton Mills to become general manager and superintendent of the Deep River Mfg. Co., Randleman, N. C.

Earl Bates has resigned as secretary of Green River Mills, Tuxedo, N. C., to become secretary and assistant treasurer of Whitney Mfg. Co., Spartanburg, S. C., effective August 15th.

R. D. Hughes Appointed Agent for A. B. Carter, Inc., in Texas

It has just been announced that R. D. Hughes, of the R. D. Hughes Sales Co., Dallas, Tex., has been appointed agent for the Texas territory to handle the Boyce Weaver's Knotter for Mill Devices Co., and Carter Ring Travelers for Carter Traveler Co., both part of A. B. Carter, Inc., Gastonia, N. C.

C. M. Stanley, Jr., Heads Textile Department At Texas College

Lubbock, Tex.—Cassius M. Stanley, Jr., has been appointed head professor in the Department of Textile Engineering at the Texas Technological College, Lubbock. He replaces Roland L. Lee, Jr., who resigned to become senior cotton technologist, cotton processing division of the Southern Regional Research Laboratory. Mr. Stanley has been with the college since 1937 as assistant professor of textile engineering.

After winning his Bachelor of Science degree in Textile Engineering at Auburn, he went to Meritas Mills at Columbus, Ga., as a fabric designer, and later was employed in the production department. He went from there to the Avondale Mills in Sylacauga, Ala., as cost engineer.

This month he received his master's degree in Textile Engineering from Alabama Polytechnic Institute. His thesis for this degree was "Cost and Production Manual."

He is a member of Tau Beta Pi, honorary engineering society; Phi Kappa Phi, honorary scholastic fraternity; Phi Psi, honorary textile fraternity, and Kappa Sigma.

Supervisory Staff At Birmingham Cotton Mills

Birmingham, Ala.—At the Birmingham Cotton Mills, the supervisory staff is as follows: T. H. Barrett, overseer of weaving; Frank Burke, overseer of carding; B. M. Newsome, overseer of spinning; L. G. Smith, master mechanic; J. T. Hunsinger, second hand weaving; C. E. Huckeba, assistant overseer of weaving, second shift; Marvin Lawson, overseer night carding; Curtis A. Ulmer, overseer of the cloth room.

Foot Crushed in Elevator Shaft As Result Of Carelessness

Reidsville, N. C.—Charles Davis, youth employed as a sweeper at the Edna Cotton Mill, was treated at a hospital July 25th for a foot injury sustained when he was caught in an elevator shaft at the mill.

The boy, it was understood, decided to go from one floor to another by climbing down some framework in the elevator shaft instead of using the elevator. While he was in the shaft the elevator started moving and his right foot was crushed in part of the mechanism. Examination at the hospital revealed a fractured matatarsal bone.

Elevator Accident Fatal To Worker

Concord, N. C.—Glenn Branham, young textile worker from near Landis, died July 19th at Cabarrus Hospital as a result of head injuries sustained in an accident on an elevator while he was at work at Plant No. 1 of the Cannon Mills in Kannapolis.

The youth's head was badly crushed when it was caught between the carriage of the elevator and the wall, one of the overseers said.

Eight Southerners On OPACS Cotton Textile Advisory Panel

Washington, D. C.—Leon Henderson, Price Administrator, on July 12th appointed a cotton textile advisory panel to advise his office concerning price control and supply in the cotton textile field.

There were 15 men appointed on the panel and Henderson said it would be enlarged later to a total of 30 to 40.

Those appointed: Robert Amory, Nashua, N. H;. Howard Baetger, Baltimore; Ted Broughton, New Bedford, Mass.; Donald Comer, Sylacauga, Ala.; Charles Cannon, Kannapolis, N. C.; Guy Harris, Danville, Va.; K. P. Lewis, Durham, N. C.; Harry Oppenheimer, New York City; Scott Russell, Macon, Ga.; J. E. Sirrine, Greenville, S. C.; J. L. Smith, Chicopee, Mass.; Earl R. Stall, Greenville, S. C.; Robert T. Stevens, New York City; Charles Sweet, New York City; and W. J. Vereen, Moultrie, Ga.

President Roosevelt Reappoints Donald Comer a Director of Textile Foundation

The reappointment by President Roosevelt of Donald Comer as a member of the Board of Directors of the Textile Foundation for a term of four years has just been announced by the White House.

Mr. Comer, of Birmingham, Ala., one of the country's leading cotton manufacturers, is distinguished not only as an industrialist, but also for his long record of public service as a private citizen. He is intimately associated with Alabama's fine record of social advances, and has always been in the forefront of movements to improve the position of the cotton textile industry as well as that of the workers and public associated with it.

Veteran Mill Overseer Retired

LaGrange, Ga.—W. H. Breed, for more than forty years overseer of spinning (mostly with Dunson Mills), has been retired with pay by the Dunson Mills, and furnished with a lovely home to live in.

Mr. Breed first went to work at the Dunson Mills in 1900, and since that time has been employed almost continuously by the company. He spent some time with the Montgomery (Ala.) Mfg. Co., but since 1914 has been overseer of spinning, spooling, twisting and warping at Dunson.

The employees in Mr. Breed's department, on the day of his retirement, presented him with a handsome watch suitably engraved, as a token of their esteem.

N. C. Textile Training School To Be Set Up in Gaston County

Raleigh, N. C.—The State Textile Institute Commission has voted to establish North Carolina's first school for the training of textile workers in Gaston County. One of the main factors in causing the commission to select this county was an offer of $50,000 in addition to a free site. The commission decided to place the school on the Stowe property, situated near the Gaston-Mecklenburg County line.

The commission hopes to build the school with WPA aid. The school will be called the North Carolina Textile Vocational School, and will be operated as a day school.

Watson-Williams Opens New Greenville Office

The Watson-Williams Mfg. Co., with headquarters at Millbury, Mass., announce the opening of a new Southern office at 810 Woodside Building, Greenville, S. C. The new office will be in charge of E. V. Wilson, Watson-Williams' Southern representative. The new mailing address will be Drawer 779, Greenville, S. C.

J. F. Notman Represents Terrell Machine Co. in New England

The Terrell Machine Co., Charlotte, N. C., announces effective August 1st the appointment of James F. Notman as direct factory salesman for the New England territory. Mr. Notman will handle the Terrell line of bobbin cleaning and handling equipment and also Denman fabric loom parts for which the Terrell Co. has the exclusive sales agency.

Mr. Notman was graduated from M. I. T. in 1935 and until joining the Terrell organization traveled in New England as sales engineer for B. F. Sturtevant Co.

At the same time E. W. S. Jasper, Inc., Terrell sales agents for Pennsylvania and New Jersey, will add New York State to its territory.

Cotton Spindles in June Operated At 121.5% Capacity

Washington, D. C.—The Bureau of the Census announces that, according to preliminary figures, 24,326,162 cotton spinning spindles were in place in the United States on June 30, 1941, of which 22,991,546 were operated at some time during the month, compared with 22,980,286 for May, 22,787,396 for April, 22,795,742 for March, 22,769,368 for February, 22,820,724 for January, and 21,954,616 for June, 1940.

The aggregate number of active spindle hours reported for the month was 9,931,548,864. Based on an activity of 80 hours per week, the cotton spindles in the United States were operated during June, 1941, at 121.5 per cent capacity. This percentage compares, on the same basis, with 121.8 for May, 119.6 for April, 116.7 for March, 114.0 for February, 112.1 for January, and 87.9 for June, 1940. The average number of active spindle hours per spindle in place for the month was 408.

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Contributions on subjects pertaining to cotton, its manufacture and distribution, are requested. Contributed articles do not necessarily reflect the opinion of the publishers. Items pertaining to new mills, extensions, etc., are solicited.

New Editions of Directories

For the last six weeks, we have been compiling the information for the Fifty-ninth Edition of Clark's Directory of Southern Textile Mills and the printing of the Pocket Edition has been completed.

The Office Edition, which is printed in larger type and contains many useful tables, will be completed sometime during August.

Many of the tables, however, have to be revised because we did not anticipate the cotton, goods and yarn prices which now prevail.

The tables of manufacturing margin on yarn only went as far as 15 cents for cotton and the prices per pound on sheetings, print cloths and other fabrics did not cover such prices per yard as those of the present.

In the table we showed the price per pound for 80x80 4-yard print cloths up to 8.50 per yard, which was much about the current prices of last August, but those goods are now selling for 10.75 cents per yard and were even higher before OPACS interference.

One copy of the Office Edition is sent, free of charge, to every textile mill in the South, other than knitting mills, but the free distribution applies only to Southern textile mills and is limited to one copy to each mill.

Communists Becoming Active

The cotton mill villages are being flooded with communist literature and frequently copies of same are sent to us by our mill friends.

A few weeks ago, the communists in the United States considered themselves as allies of Hitler and were engaged in promoting strikes in war defense industries.

Hitler's sudden attack upon Russia made the communists interested in the production of war materials and defense industry strikes immediately decreased 75 per cent.

Now the communists and their friends, including college professors, are busy laying the ground for the establishment of communism in the United States after the war.

The literature being sent into the mill villages pictures the Soviet leaders as persons of angelical character, interested only in relieving distress and oppression.

It pictures life under communism as an ideal condition and one where there is freedom and every man is his own master.

The truth is, that there has been no freedom in Russia since the communists came into power and the rule of the Soviets has been by blood purge. Several million men have been shot without trial upon the mere suspicion that they did not agree with the dictators.

After visiting Russia in 1935, Robt. Ripley (Believe-It-or-Not) described the manner in which the churches had been looted and the property of all citizens confiscated and then said:

After appropriating all the conceivable wealth in Russia in this gigantic scheme of "sharing-the-wealth," believe it or not there is not a single working man in the Soviet Union today who owns an automobile—or his own home—or has five thousand rubles in the bank—as per the formular of our political demagogues.

Everybody in Russia is a prisoner of the government. The working man has no choice about his work or where he lives or how much he is paid. He has no religion, no home life and no privacy.

He has utterly no freedom of speech. You might remember this next time you hear one of our many soapbox orators spouting forth; and bear in mind that if he attempted to open his mouth in Communist Russia he would wake up to find himself either dead or on his way to Siberia.

His freedom of movement is denied him. He can't go from one village to another—he can't quit his job—he can't even take a day off. Without warning he is liable to be arrested, torn from his family, herded into a freight car and sent thousands of miles away, where he is forced to labor under inhuman conditions in some concentration camp of Northern Russia.

These conditions are imposed upon every Soviet worker by the government, and there is no escape. A worker may be dissatisfied and try to leave the country, but if he is caught he is shot. If he succeeds in crossing the border, his innocent relatives are made to suffer. All his family are exiled to Siberia.

Those who read the communist literature now being furnished them, should compare the picture it paints with the above statements of Robt. Ripley which were made after he visited Russia.

We wish Russia to stop Hitler, but we realize that if the Russians win, it will greatly advance the cause of communism over the world.

We are "between the devil and the deep sea" when we consider the Nazi of Germany and the Communists of Russia.

To the United States it is a case of "heads you win and tails I lose."

North Carolina Textile Institute

The commission appointed by the Governor of North Carolina has located the North Carolina Textile Institute on a 16-acre site in Gaston County, very near the Mecklenburg County line.

The Legislature of North Carolina appropriated $50,000 for the project and the textile mills in Gaston County matched it with another $50,000, and there are hopes of obtaining additional funds from the WPA.

The Institute, when completed, is to be operated by the Federal Department of Vocational Education.

We heartily approve of the project and think that an excellent location has been found, but are not certain about its future.

It was intended as, and should be, a training plant for textile mill employees.

It should be a place where unskilled persons can go and learn to spin, weave or knit or to perform other textile operations and thereby be able to obtain positions in textile mills.

It should not be a textile school or attempt to go beyond the conversion of unskilled workers into those skilled enough to be able to enter textile work without requiring much instruction.

With N. C. State College and Clemson College available for those who wish to take textile courses, there is no need for another textile school in this section.

If the North Carolina Textile Institute is converted into a textile school, instead of a training plant for those desiring employment in textile mills, it will eventually require larger and larger appropriations from the North Carolina Legislature and become a burden upon taxpayers.

Pennsylvania has for many years had a fine School of Forestry at Penn State College but was induced to establish an elementary school in another section. In a few years the second school was calling for large appropriations and attempting to rival the original school. Finally, the Legislature abolished the second school.

A training plant for textile employees can be well worthwhile and can render real service to the textile industry.

To go beyond the training of textile employees and attempt to become a textile school will eventually lead to disaster.

Keep Off the Grass

Following the recent rains a farmer in Elbert County, Georgia, posted a sign which read:

KEEP OFF THE GRASS—THERE IS COTTON UNDER IT

The Fruits of War

The soldier lying, broken and bleeding, upon the battle field may, by summoning his courage and his patriotism, feel that his hurt was justified because the cause for which he fought was right and noble.

It is more difficult for the man who sees his business cease operations because of lack of raw materials or those who are thrown out of work to accept their hurts with the same fortitude as the dying soldier, but all three are the victims of fortunes of war.

The Japanese have been producing about 85 per cent of the world's production of silk and the United States has been, by far, its largest customer.

The time will come when nylon and similar products will replace silk but the following figures upon the production of silk and nylon hosiery during the first five months of 1941, indicate that such a day is still far off.

Five months shipments of ladies' hosiery:

Full fashioned (mostly silk)	15,131,786	doz. pairs
Seamless	349,209	" "
Nylon	2,751,493	" "

This shows that nylon hosiery is still only 15 per cent of the total of silk and nylon hosiery.

Late this year the production of nylon will be enlarged by the completion of the plant now being erected at Martinsville, Va., but there is no prospect that nylon or similar yarns will, for several years, be able to fully supply full fashioned hosiery mills.

There seems to be little doubt that the United States and Japan will soon be at war, and while the present situation is hard upon full fashioned hosiery mills and their employees, it is something which was almost certain to happen at sometime.

The United States has no desire for war with Japan but the Japs decided to cast their lot with Hitler and have set out upon a campaign of aggression which can easily lead to an attack upon the Philippines.

SPEED OF LOOM MOTORS

By Channing B. Brown

Duke Power Company

IN textile mills producing rayon or standard print cloth, the motor driving the loom is a very vital and important part of the integrated layout of textile machinery. The speed of the loom motor, when directly connected to the loom, controls the quantity of production of the driven loom, consequently the maximum speed at which the loom can operate to produce a quality product is essential. A maximum constant speed with no "bang-offs" is required to reach the estimated maximum production in yardage of woven cloth. One hundred per cent production is impossible; however, a high production is the goal of every weaver.

In the Piedmont Section of North and South Carolina a large number of looms in the textile industry are driven by a single motor for each loom. These motors vary in size from ½ H.P. to 1½ H.P., depending upon the size of the loom and the speed at which it operates. These small motors are all 3-phase, 60-cycle motors, generally of the squirrel cage, induction type operating at a nominal voltage of 220 volts or 550 volts. Very few installations in this section are other than as outlined above. However, where looms have previously been driven through line shafts powered by steam Corliss engines, larger motors of 25 H.P. to 75 H.P. are sometimes installed to drive line shafts from which many looms are driven. These cases are becoming less common with individual loom motors predominating.

The squirrel cage, induction motor is especially suited to this type of exacting service where continuous production at a speed with little or no variation under variable load conditions is paramount. The speed of a given motor of this type is dependent upon three operating conditions: (1) frequency of power supply (60 cycles in the Piedmont Section of the Carolinas); (2) the applied load on the motor; (3) the voltage delivered to the motor terminals.

Synchronous speed of 60 cycles per second is dependent upon the speed of generators of the central power station or the individual consumer's power plant. To check this speed, an electric clock plugged into a service receptacle on the same power system that delivers power to the loom motor, should give correct time. The electric clock, which is a synchronous motor, can be daily or hourly checked against a chronometer or Naval Observatory Time to determine how much the nominal synchronous speed of 60 cycles per second varies from the exact speed or its equivalent time. This speed of electric generation may be stepped up where a consumer operates his own plant; however, a constant speed allows the loom fixers to adjust looms for a maximum production at all times, thus eliminating this element of variation. Since electric clocks are becoming more common, it is practically mandatory that all central station power companies operate at synchronous speed of 60 cycles per second, correcting at intervals for small discrepancies as compared with Naval Observatory Time.

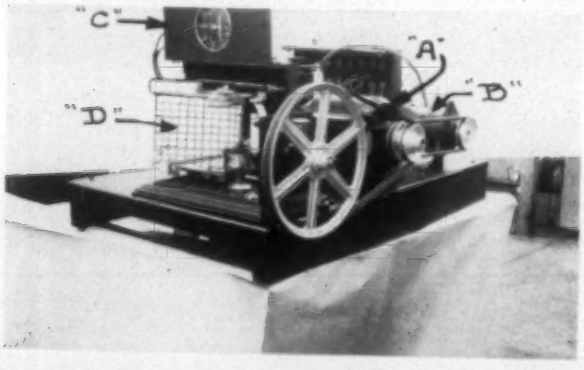
In view of the above limitation as to synchronous speed, it is evident that this factor would tend to produce a constant speed for loom motors, and may be dismissed in this discussion of loom motor speeds.

A four-pole squirrel cage induction motor operating without load on a 60-cycle source of supply will approach a speed of 1800 R.P.M., which is the synchronous speed of such a motor. As load is applied to this motor its speed will decrease until with full load applied the speed will be approximately 1710 R.P.M. or approximately nameplate speed. The load as applied to a loom motor has a direct bearing on the speed. From full load to no load while the motor is idling, this speed will vary practically in proportion to the load applied. It would seem that a loom operating as it does would produce a uniform load on the individual loom motor. This, however, is not true, for during each pick the individual loom motor is fully loaded just as the shuttle is kicked by the picker stick and then reduced to no load or even operated as a power producer as the lay is brought to a full stop before being reversed in motion. In a group drive of many looms from one or more line shafts the temperature and humidity changes between day and night may appreciably affect the slippage of belts on pulleys and thereby vary production and load conditions on the loom motor. The tightness of the belt between motors and loom pulleys has a direct bearing on the load and consequently speed of the driving motor. On one test where a large number of looms were driven from three line shafts operated by one large motor, the belts were cut and tightened, increasing the load ap-

proximately 10 per cent. This tightening of belts allowed less slippage, driving the looms at a higher speed, increasing the motorload, but at the same time increasing production. On this same line shaft different loom speeds actually varied from 148 P.P.M. to 162 P.P.M. although all looms were intended to operate at the same speed.

It is evident that loom motor speed is therefore dependent upon the load applied and will vary from part load to full load approximately in a straight line in proportion to the load applied to the motor.

Squirrel cage induction motors as commonly used for individually driving looms also have a small variation in speed due to variation in voltage. This characteristic is not as easily explained in view of the fact that the motor speed is little effected by a voltage change. A decrease of 10 per cent in voltage will change the motor speed, under constant load, less than 2 per cent. Ten per cent (10%)



of 220 volts is 22 volts, which is a very large variation. Even this amount of change would reduce the speed of a loom operating at 180 picks per minute less than 4 P.P.M.

Ordinarily there will be a very small variation in voltage at the source of power supply to the consumer which is in most cases the substation of the power company or the bus of the consumer's generating plant. This small variation, however, may be amplified where there is a large drop in voltage due to overload circuits with insufficient copper on the feeder circuits to individual motors, or even on main circuits to many motors. Where such a condition exists the only remedy is an increase in the size of copper conductor in the overloaded circuits, or some auxiliary regulation to overcome this handicap.

In order to subsantiate claims that voltage variation has little effect on motor speeds as stated above, an experiment with standard equipment was performed. This equipment is shown in the accompany photographs.

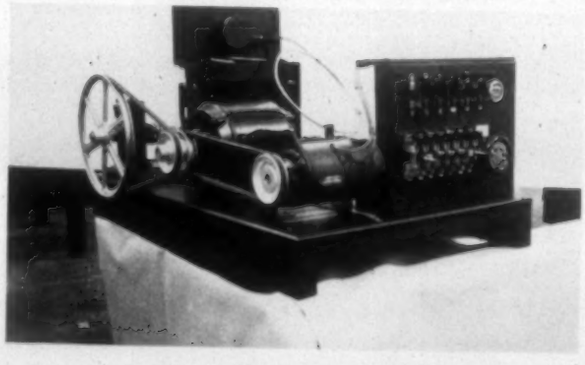
In the photograph the motor marked "A" is a Westinghouse Electric & Manufacturing Co. Type FS, ½ H.P. motor, 3-phase, 60-cycle, 220 volts, 1725 R.P.M., Serial K1, Style 953583-A motor. To produce a load similar to the average load of a loom, a common D. C. automobile generator "B" is driven by the motor through a V-belt drive. This generator produces power which is dissipated through strip heaters mounted under the bed plate of the equipment. The load on the ½ H.P. Motor "A" may be varied through adjustment of rheostats connected in series with the field of the D. C. generator. In order to determine the speed of the motor at various loads and applied voltages, an indicating speed recorder "C" is directly connected to the motor shaft. Also a fly-ball type relative speed recorder "D" with a suppressed scale is driven by V-belts from the motor sheave. This equipment may be adjusted so that the motor can be loaded to represent conditions similar to that of a loom load. Also the voltage applied to the motor may be varied through the experiments and at the same time the speed may be recorded or instantaneously read under the various conditions of operation.

There is also a recording voltmeter and ammeter giving instantaneous readings on power as being delivered to the motor being run for the experiments. Many conditions approximating actual operations of loom motors may be had giving actual results to substantiate computed data.

A motor to deliver ½ H.P. requires more than this amount of power delivered to its terminals depending upon the efficiency of the motor at this load. One-half H. P. is 373 watts from the formula 1 H.P.=.746 kilowatts, or 1 H.P.=746 watts. The motor on test has an efficiency of 76 per cent at full load of ½ H.P. Therefore the input to the motor to produce ½ H.P. output will be 373 divided by .76 or 491 watts. Using 492 watts as the required motor input to deliver ½ H.P., the following data was obtained.

Test No.	Motor Input Watts	Motor Voltage Volts	Motor Speed R.P.M.	Variation Per Cent
1	491	230	1730	+1.16
2	491	225	1720	+0.59
3	491	220	1710	0.00
4	491	215	1705	−0.29
5	491	210	1700	−0.59

Test No. 3 is for a motor output of ½ H.P. with an electrical input to the motor of 491 watts at the normal voltage or nameplate reading of 220 volts. This condition



produced an indicated speed as read from the Speed Recorder "C" of 1710 R.P.M. Test No. 1 increases the voltage to 230 volts while maintaining the same load on the motor of 491 watts producing a speed of 1730 R.P.M., which is 20 R.P.M., or only 1.16 per cent higher than normal speed with an increase of 10 volts. Test No. 5 under similar conditions reduces the speed only 0.59 per cent for a decrease of 10 volts from normal operating conditions. These limits with voltage changes of 20 volts on a 220-volt service are conservatively inclusive where the electrical installation has been adequately made to carry the intended load and normal delivery of power from the source of supply is available.

Modern mills are giving special attention to control equipment on loom motors and feeder circuits. Individual loom motors may be equipped with manually operated

across-the-line switches in which thermal overload protection only has been included. The feeder circuit or circuits to the weave room are equipped with low voltage time-delay switches which trip out at a predetermined interval if a continued low voltage condition exists. A short surge with consequent low voltage dip does not trip off the loom motor circuit but maintains contact through the circuit time-delay device previously set at an interval in which loom operation would continue with few, if any, "bang-offs."

The speed of loom motors is not dependent upon any one condition that may vary, but upon many conditions of operation. Many of these causes for variations in speed are momentary and may be controlled, dampened out or delayed to such an extent that there is a minimum loss of time and consequently a maximum production of the textile fabric from the loom.

Centralized Lubricating System

A progressive lubricating system, centralized to permit high pressure grease lubrication to any number of bearings on a given piece of industrial equipment, is announced by the Alemite Division, Stewart-Warner Corp.

From one central point the new Alemite progressive lubricating systems will deliver a predetermined quantity of lubricant to from three to twenty bearings and, when the job is completed, a readily visible indicator signals the operator, according to the announcement. On equipment that involves a large number of bearings, the system may be employed in relays, each system or relay lubricating a maximum of twenty bearings. Any type of manually or power-operated high pressure grease gun may be used with the systems.

One of the advantages of the new Alemite progressive lubricating system is its simplicity of installation. One system or a relay can be installed with ease on the most intricate piece of machinery, it is said. Designed expressly for large-scale industrial lubrication, the Alemite progressive system is said to offer four major improvements in this type of lubrication:

1. All bearings in one piece of equipment can be lubricated simultaneously from one central point.
2. Inaccessible or dangerously located bearings are conveniently lubricated at will.
3. Lubrication of complete machinery is speeded.
4. Machines may be lubricated while operating.

Free Sunlight Utilized Efficiently for Textile Plants

In these days of soaring manufacturing costs, the fact that natural daylight remains free of charge is important, and greater utilization of this cost-free item is even more important.

Glass, of course, enables manufacturers to utilize natural daylight to conduct daytime operations, but now there are available improved types of glass that not merely utilizes daytime illumination but sharply reduces direct sunlight glare. This glare-reducing characteristic is said to efficiently diffuse such light for controlled light intensities while excluding solar heat by absorption, thus providing cooler summer temperatures and effectively minimizing localized solar heat conditions that upset humidity control near windows.

Textile men expressed interest in such a glass when it was exhibited at the recent Southern Textile Exposition in Greenville, S. C.

Heat-absorbing Aklo glass, when processed into what is known as Frosted Aklo, is said to enable manufacturers

to actually control light conditions within a plant and to sharply set up the efficiency of incoming daylight when utilized in walls and monitors. This type of glass is being used extensively in the many new buildings being erected throughout the country by the airplane industry where efficient, glareless daylight is a prime requisite.

Glareless light distribution is claimed to be so improved that it becomes unnecessary to resort to the painting or curtaining of certain areas of glass, so that maximum illumination efficiency is achieved with the product.

The heat-absorption characteristics of this glass step up employee efficiency by increasing personal bodily comfort, along with elimination of eye fatigue so often induced by glare. Direct sunlight has no opportunity to heat up machinery and thus complicate humidity control problems.

G. E. Orders for Half Year More Than Half Billion

Schenectady, N. Y.—Establishing a record for a six months' period, orders received by General Electric Co. during the first half of this year amounted to $521,139,000 compared with $212,653,000 for the same period last year(an increase of 145 per cent, President Charles E. Wilson announced.

Orders received during the three months ended June 30th amounted to $263,757,000, a record volume for a quarterly period, and were equivalent to an increase of 129 per cent over the $115,163,000 of new business booked in the corresponding period a year ago.

The company's orders definitely known to cover equipment for national defense purposes amounted to approximately $216,000,000 in the first six months this year, including $104,000,000 received in the three months ended June 30th, thus making a total of about $466,000,000 of such orders received since the defense program was instituted last year.

True, the cost of "lighting" in such applications is limited to the cost of the lamps and the cost of the current used, but the *cost of light* is usually tremendously high, because too small a percentage of the source actually reaches the work area.

To arrive at best lighting equipment to use in plant and industrial light, we must take into consideration:

1. Percentage of light under control with the equipment under consideration.
2. Reflection factor of reflecting surface of equipment under consideration.
3. Ease of maintenance of equipment for high constant reflecting efficiency.
4. Candle power distribution curves of the units under consideration, to determine proper installation as to spacing and mounting for an even distribution of light.

We buy the current from the power company, and for this we pay by the kilowatt hours consumed. This, together with the lamp costs does not, of course, constitute our cost of lighting, as has been explained previously. It is impossible to get away from fixed charges and the costs of operation when these are present, whether we recognize them or not. Lighting equipment, like any other equipment purchased, depreciates in value from year to year, and has to be replaced when necessary, to maintain high efficiency.

Reflector cleaning is much too often neglected wholly, or in part. When dust, dirt, smoke, vapors, etc., settle on the reflecting surface of a reflector, they develop a "film" thereon, which the light has to penetrate in order to reach the reflecting surface, and then the light has to penetrate this film again on the way out from the reflector. This causes up to 50 per cent, sometimes more, loss in light delivered, as compared to a brand new, and immaculately clean reflector.

It must be remembered, primarily, the fact that merchandise has been bought cheaply, it will not always provide the lowest cost. We must realize that all factors have to be taken into consideration, in order to arrive at total costs.

Recently, a lamp has been developed that utilizes pure

Red Hills

"Red Hills" is a new book which has been written under the pen name Marel Brown, who in private life is Mrs. Margaret Elizabeth Brown and a daughter of Geo. B. Snow, of the Atlanta Brush Co. The publishers say in the advance notices: "We have never published a more charming book. The price is $1.00.

Lighting Cost in Your Plant

(*Continued from Page 14*)

cost in preparation for replacement of the units when they become obsolete, and also the maintenance or "cleaning" of these reflectors. Also, as every plant executive fully knows, as soon as the reflectors are placed in use, they increase the valuation of the plant, thus it is necessary to add the added cost of taxes as part of the lighting costs. Also, inasmuch as these reflectors add to the total valuation of the plant, the increased insurance costs have to be taken into consideration as part of the lighting cost.

Cost Data

Taking into consideration an installation of reflectors, the cost of plant lighting will be established on the following basis:

TABLE NO. 1—COST DATA

Cost of Reflector	$
Installation Cost	$
Fixed Charges (including interest, taxes, insurance, depreciation, etc., usually 25 per cent of the cost of Reflector)	$
Maintenance Cost (cleaning reflectors, per year)	$
Lamp Cost (total operating hours, divided by rated average lamp life, multiplied by the net individual cost of lamp)	$
Total Cost	$

TABLE NO. 2—COST OF OPERATION—FIRST YEAR

Current Cost (total operating hours, multiplied by lamp wattage, divided by 1,000, multiplied by KWHr Current Rate)	$
Other Costs (total cost Table No. 1)	$
Total Cost of Operation—First Year	$

TABLE NO. 3—COST OF OPERATION—EACH SUCCESSIVE YEAR

Current Cost (same as in Table No. 2)	$
Fixed Charges (from Table No. 1)	$
Lamp Costs (from Table No. 1)	$
Maintenance (from Table No. 1)	$
Total Cost of Operation Each Successive Year	$

The above tables will determine the total *cost of lighting*. Now, it is necessary to determine the *cost of light*. To do this, we divide the total cost of lighting, by the average foot-candle intensity derived from the equipment, and thus we arrive at the *cost of light per foot-candle* intensity delivered to work-plane levels.

So, if we are getting an average of 15 foot-candles of intensity on work-plane levels, and our cost is $3.00 per outlet for 100 outlets, or a total of $300 per room, our cost is 20c per foot-candle per outlet, or $20 per foot-candle for the room.

In many plants, however, there are no reflectors in use. Lamps usually are placed in open sockets on drop cords, and often no symmetrical installation is in use as to spacing and mounting of these lamps. As a result, light travels in all directions from the sources, mostly in a horizontal direction due to the characteristics of incandescent lamps, and very little, if any, of the source is under control.

silver as a reflecting surface, this pure silver reflecting surface being on the inside of the lamp. Thus, we have a reflector with a reflector factor of 92 per cent—higher than any other commercially usable material—reflecting light back to the work areas. Also, this direct type silver reflector lamp has approximately 75 per cent of its total light output *under control*.

Experiments with this pure silver reflector lamp under actual working conditions in various industrial plants have proven that these reflector lamps will deliver more light per watt of current consumed than any combination of ordinary lamps and reflectors, and that these lamps will deliver the intensities required, or desired, at a lower cost per unit (foot-candle) of light than any combination of lamps and reflectors on the market today, where the rate of current does not exceed 2c per kilowatt hour.

This pure silver reflector lamp is said to eliminate maintenance cost entirely, since the reflecting surface is hermetically sealed on the inside where no dirt, vapor, dust, etc., can reach it. As a result, it makes possible an immaculately clean reflector in the plant every hour of every day, and a brand new reflector with each lamp renewal. It goes without saying that a brand new lamp with a brand new reflector is definitely better than a brand new lamp in an old reflector.

Recent Developments in Synthetic Fibres and Fabrics

(*Continued from Page 12*)

already under good control. Others, such as surface character, are not. Only the textile designer working with the rayon chemist and physicist can determine what combinatiton of properties are most desirable for a coat or a carpet or a fish net. They are *not* necessarily the properties of silk or wool or cotton or linen or jute or hemp! Once the desired specifications are known, a man-made fibre may be developed to meet them.

II. Recent Developments in Man-Made Fibres

Let us now briefly survey the man-made fibres of this present day, including those which are already commercially important and also some which are still in the pilot plant stage or in the laboratory, keeping in mind the new philosophy of textiles rather than the old. The development and application of some of these made-to-order fibres illustrates the new approach to textile thinking which I like to characterize by the term *"Fibre Engineering."*

By adopting the word, Prolon, which has recently been suggested as a generic term, and by coining a word, "Synthon," for another generic term, we can organize our discussion into the following groups of man-made fibres:

1. Rayons—Fibres made from a natural cellulosic base: viscose, acetate, cuprammonium.
2. Synthons—Fibres made from organic substances which in turn have been synthesized from simple raw materials: Nylon, Vinyon, Permalon.
3. Glass—Fibres made from a natural protein base: casein, soy-bean, fish protein.
5. Miscellaneous—Fibres made from natural bases other than cellulose or protein: Alginate, chitin.

1. Rayons

The commercial importance of the rayons needs no ver-

WANTED—Position as Jacquard Weaving Overseer, Taps, drapes, spreads, etc. Any make of looms or head. First-class loom fixer; 10 years' experience as overseer. Address "Jacquard Weaving," care Textile Bulletin.

WANTED—Position as cloth room overseer or second hand. Have had 4 years' experience as second hand, 25 as overseer of cloth room. Experienced on Prints, Drills, Twills, Duck, Osnaburg and Specialties. Sober; good manager of help. I. C. S. graduate. Am now employed in large cloth room. Can change on short notice. Prefer Georgia, but will go out of State. Address "Competent," c/o Textile Bulletin.

Wool's Output In May Climbs To New Heights

Production activity in the wool textile industry reached new heights in May, the National Association of Wool Manufacturers reported.

Asserting the addition of 3,700 employees to the working forces in wool textile mills raised the number so employed to 189,000, the Association statement said:

"Increases in operation of wool machinery . . . were sufficient to establish the highest rates on record since the early '20's.

"Broad looms and spindles were more active in May than in any other month since June, 1923, and woolen spindles also operated at a higher level than at any other time in the past 15 years.

"Worsted combs were slightly more active in May than in March, 1941, when the previous record was established in the period for which data is available (1921 to date)."

Analyzing statistics of the Bureau of Census, the Association said that in May, for the first time on record, consumption of raw apparel wool in the United States amounted to more than 10,000,000 scoured pounds per week.

Index to Advertisers

Where a — appears opposite a name it indicates that the advertisement does not appear in this issue.

Classified Department

WANTED

An A No. 1 Foreman for Weave Room, 200 dobby looms.

Address Reply "X,"
c/o Textile Bulletin.

WANTED—Position as carder. Good help manager. Extra good in taking care of machinery. Have had experience on coarse and fine work; combing, etc.; stapling cotton. References.

Address "W,"
c/o Textile Bulletin.

POSITION WANTED as Overseer or Shift Foreman in Twisting and Winding. Can furnish good references; am 38 years old; sober; member of church. Familiar with all types Twisting, Spooling, Winding, Warping, and Card Weaving. Address "J. C. D.," c/o Textile Bulletin.

WANTED—Position as Overseer Carding or Spinning, cotton or rayon; 15 years as overseer. Will consider night superintendent. Now employed; will give reason for wanting to change in interview. Best of references. Address "Overseer Carding," c/o Textile Bulletin.

WANTED—Position as roller coverer and belt man; 25 years' experience. Can furnish the best of references; also start work at once. Address "Roller Coverer," c/o Textile Bulletin.

WANTED—Position as roll coverer. Have had 16 years' experience on all kinds of rolls and can work any kind of leather. 30 years of age; married, settled, honest and sober; can furnish excellent references from present employer. Address "AG-16," c/o Textile Bulletin.

Staple Rayon Expands In Carpet Trade

Since the introduction in 1940 of the first nationally advertised rug made largely of rayon, other large floor covering manufacturers have presented several successful rayon lines. These have received a good retail and customer acceptance, and are succeeding on the basis of actual merit.

At present there are four different types available on a production basis —two standard constructions in Axminster by Bigelow-Sanford, containing about 50 per cent staple rayon and 50 per cent carpet wool in the pile; a special low-row Axminster construction by Charles P. Cochrane, of 100 per cent rayon; and a 100 per cent rayon velvet line by C. H. Masland & Sons. It has been learned that other manufacturers are contemplating new lines containing staple rayon for early release, and that present users of rayon will also expand in the Axminster and velvet types. The carpet trade is estimated to be using rayon in present lines at the rate of nearly 2,000,000 pounds per year which can jump to several times this figure should additional lines be introduced or if wool market conditions become more critical.

ification. Of approximately 480,000,000 pounds of man-made fibres consumed in the United States in 1940, over 470,000,000 pounds were rayon, of which about 2/3 were viscose and 1/3 acetate, with cuprammonium yarns representing a few per cent of the total.

Rayon fibres are made in several lustres, from bright to dull, and in a range of fineness from 1 denier to 30 denier. The rayons are available as continuous filament yarns and as staple fibres prepared for processing on the various existing types of textile machinery. Of the 471,000,000 pounds of rayon consumed, about 83% was continuous filament and 17% staple fibre. The more rapid growth of staple fibre in countries seeking economic self-sufficiency is shown by the fact that of the world production of rayon in 1940 of about 2½ billion pounds, over 50% was staple fibre.

Where extra strength is required, the viscose process has several products. Cordura tire yarn, according to Bradshaw, has a breaking strength of 70,000 pounds per square inch (3.5g/den.) As the tire heats up and drives out moisture, Cordura becomes stronger. Tenasco is another viscose tire yarn. The development of rayon tire cords is a typical example of fibre engineering.

Avisco staple fibre is made of the strong type viscose and is said to make spun yarns whose dry and wet strength is approximately 1/3 greater than that of ordinary viscose staple.

The acetate process has a strong yarn called Fortisan which is being made in England and for which production is being planned here. It is composed of very fine filaments and is said to be the strongest of all natural or man-made fibres. In a recent paper by Miller, of the Naval Aircraft Factory, on parachute constructions, Fortisan lines and Fortisan fabric were found to be far superior to silk lines and fabric in strength, tear resistance, and resistance to ageing. This is another example of fibre engineering.

A commercial viscose staple fibre called Fibre D is designed particularly for carpets, upholstery, and plushes. Made in coarse sizes (from 10 to 30 denier) it is characterized by a round cross-section free of the longitudinal striations which have been found to catch and hold dirt, and by a very pronounced and persistent crimp which contributes to the bulk of the pile. Rayon fibres are already being used in carpet production and both viscose and acetate fibres of various types are being tried intensively. Here is one of the most fertile fields for fibre engineering for even the carpet manufacturer does not know exactly what combination of properties is ideal for carpet fibre. As in other fields of textiles, the carpet man's horizon has, of necessity, been limited until recently by the relatively narrow range of properties available in wools. Who can say what new kinds of carpets and upholstery will result from the creative design of fibres for this particular purpose?

The surface of all rayons is normally smooth as a result of the mechanism of formation because the skin formed about each issuing stream of spinning solution must be stretched by drafting as the volume of the coagulating strand is reduced by the removal of the rest of the solvent from the inner portion of the newly-formed fibre.

Although ordinary rayon differs in this respect from cotton and wool, whose convolutions and whose scales respectively produce an irregular fibre surface, the frictional cohesion between rayon fibres in a spun yarn is evidently as good or better than between natural fibres, probably because the smooth surfaces and the *longitudinal* striations afford a greater area of contact between fibres. But from the standpoint of carding and drafting, as well as from the standpoint of shedding of pile fabrics and the maintenance of a porous fabric structure where warmth is desired, a roughened or irregular surface would be desirable.

The Kohorn viscose staple is one example of this type which is not yet in production in this country. Experiments are being made on viscose, acetate, and cuprammonium fibres with rough surfaces. The combination of suitable strength, elasticity, and resilience with roughened fibre surface will be a real accomplishment in fibre engineering and will undoubtedly widen the utility of man-made fibres in the field of blankets, knit goods, and coatings.

The crimped acetate staple fibre, Teca, and its recent competitors, has carried the distinctive properties of acetate rayon into the spun rayon field. Since 1936, it has been used alone or in blends with other fibres because it could be cross-dyed and because of its inherent crush-resistance. Today it is helping to solve a problem of fibre engineering which is of tremendous importance to the consumer, namely, the problem of shrinkage in the laundry.

Spun rayon apparel has leaped into favor for sportswear and for summer clothing for both men and women. Instability of dimensions in laundering, however, has resulted in much dissatisfaction in the past. This trouble can be overcome to some extent by proper attention to fabric construction and to finishing methods.

The fundamental cause of shrinkage and stretching of textile fabrics, however, is bound up in the swelling of the individual fibre when wet. Acetate swells very much less than viscose or the natural fibres. The blending of a suitable amount of acetate staple, therefore, make the fabric more stable against dimensional changes. The practical outcome of this fibre engineering is a woven label bearing the seal of the American Institute of Laundering, which is sewn into every garment of a line which has passed the laundry's practical washing test.

2. SYNTHONS

The fibres of the synthetic resin, or high polymer, group are those in which the basic raw materials are not fibrous or complex molecules extracted from natural, plant or mineral sources, but simpler substances such as water, air, petroleum, coal, natural gas, and limestone. From these the organic chemist has learned to synthesize or to extract simple organic compounds such as alcohols, acids, ammonia, and amines. Using these as building blocks, the research chemist has built up synthetic fibrous molecules from which to make fibres whose properties differ from the rayons as well as from the natural fibres. Here is fibre engineering again.

Nylon, for example, is the only successful man-made fibre for full fashioned hosiery which combines the strength, the elasticity, and the dyeing properties required in this field. Its practical success is attested to by the recent statement of the National Association of Hosiery Manufacturers that between 17 and 20 per cent of all full

fashioned hosiery produced during 1941 (the second year of its commercial existence) will be made of Nylon.

Nylon is also commercially important in fine fishlines and is being tried in a number of military applications, such as parachutes. A systematic investigation of its value in woven goods is being conducted by the allotment of a small percentage of the total production for this purpose. Neckties, sheer dress fabrics, linings and raincoat fabrics are some applications in which commercial experiments are in progress. This fibe engineering will determine those applications in which its distinctive properties are most valuable, and those in which it is economically or technically less suitable than other fibres.

The vinyl resin fibres have established themselves as made-to-order for a very important group of industrial fabrics, namely, filter cloths. Many chemical operations require the separation of liquid from solid suspended matter for the purpose of clarifying the liquid or recovering the solid or both. Although cotton has been the most commonly used fibre for filter cloths, wool, silk, asbestos, and, more recently, glass, are also used, the choice of fibre depending chiefly on the desirability of attaining the maximum possible chemical resistance to the substances being handled. The rapid deterioration of filter cloths in chemical plants is disadvantageous not only from the standpoint of cost of replacement, but also from the standpoint of contamination of its products.

Vinyon in this country and its prototypes abroad are outstanding examples of fibre engineering. Vinyon is stated to be unaffected by most concentrated acids, caustic alkalies, and ammonia in concentrations as high as 30%, cuprammonium solvent, gasoline, mineral oils, alcohols, glycol, water, yeast, molds, bacteria, moths and beetles. Since it does not absorb water appreciably, its very excellent strength and elasticity are maintained in the presence of aqeous solutions. Its distinctive utility for filtering all of the above-mentioned materials is limited only by the fact that it must not be used at higher temperatures than 150° F., above which it undergoes drastic shrinkage.

Vinyon is also used for gloves and for fish nets and lines. It offers interesting possibilities for hosiery. Its thermoplasticity is utilized in the production of felts by subjecting mixtures of vinyon with wool or with non-filtering fibres such as glass, asbestos, hair, jute, cotton, or rayon to heat and pressure. Plasticized acetate rayon is also used for this purpose. By varying the percentage of thermoplastic fibre and the pressure, a range of felts from a soft wadding to a hard flexible board can be obtained.

The shrinkage of vinyon at high temperatures is utilized for producing novel pucked effects in blended fabrics.

3. Glass Fibres

Fibre engineering in glass has resulted in a product of outstanding value for both heat and electrical insulation and for filtering. Its chemical resistance is not as general as vinyon, but it is particularly suited for use at higher temperatures.

As a covering on wires for the coils of electric motors, it is unique among textile fibres. The fact that it can be wrapped on the wires in a thinner layer than any other fibre brings the wires closer together and consequently greatly increases the efficiency and power output of a

given sized motor. In addition to this, its insensitivity to moisture maintains the high efficiency under conditions of dampness, and its insensitivity to heat permits the motor to operate safely at higher internal temperatures than is possible with organic fibres.

Glass is tremendously strong, but inherently brittle; therefore while it is being used as a novelty in neckties, table cloths and draperies, it will obviously not be of any appreciable importance in wearing apparel nor in household fabrics which have to withstand frequent flexing.

4. Prolons

The Prolons include fibres made from casein (milk protein) which have attained a limited commercial importance, and fibres made from soya bean protein or fish protein which are still in the laboratory.

The development of casein fibres was essentially due to Fascist efforts to make Italy independent of wool. The production of propaganda for Lanital has been far greater than that of Lanital itself. In all countries (including the United States) which have experimented with casein fibre, their principal usefulness has been found to be in felts where the blending of a small quantity of casein fibre with wool or hair improves the felting quality of the latter. In this country "Casein Fibre R 53" is being used in this way by the hat manufacturers.

Other outlets for casein fibres are being explored, but experience abroad has indicated that this type of fibre has little to offer in the apparel field.

Extensive experiments with soya bean fibre are in progress both here and abroad, the results of which must be awaited before an appraisal of its value can be made.

The chemist or the fibre engineer who appraises these Prolon fibres objectively, however, must point out that the raw materials from which they are made are essentially non-fibrous in nature and not inherently tough and coherent. Although they have been converted by chemical and physical manipulation into a fibrous form, the evidence to date is that they lack the stability and inherent resistance to deterioration possessed by natural and man-made fibres whose molecular structures are truly fibrous.

5. Miscellaneous Fibres

Of the various other experimental fibres which have come to my attention recently, the alginate fibres appear to have the most promise, because the raw material from which they are made is naturally tough and fibrous.

Alginic acid is extracted from seaweed, of which enormous quantities are cast upon the shore in many parts of the world. By extracting the alginic acid with mild alkaline solution, and then reacting it with salts to form metal alginates, fireproof fibres of moderately good physical characteristics can be spun from solutions of these alginates on regular viscose machinery. Beryllium alginate has been found to be the most stable of the various salts of alginic acid, particularly with reference to hot soap liquors.

Alginate fibres are fireproof due to their metal content. Strengths comparable to the rayons have been reported and can be increased, when necessary, by stretch-spinning. The fibres have a higher affinity for water than wool.

Here, then, is a product born, perhaps, of the restrictions imposed by the war, which may further diversity

the materials of fibre engineering.

One other raw material which has been mentioned occasionally during the last fifteen years is chitin, which occurs in the shells of lobsters, crabs, and certain insects. While its fibrous molecular structure is probably suitable for fibre making, the problem of collecting the shells economically in sufficient quantity is undoubtedly a stumbling block to the commercial practicability of this type of fibe.

III. Textile Technology Under the Impact of the Man-Made Fibres

In the first part of this lecture, we considered how the impact of the man-made fibres is changing our *philosophy of textiles* by liberating the creative textile mind from the confinement of the four walls of cotton, wool, linen and silk into the boundless space afforded by man's new-found ability to create fibres and fibre properties at will.

In the second part, we examined some recent developments of the man-made fibres as examples of the new philosophy of creating numerous fibres to suit our textile purposes, instead of suiting our textile purposes to the fixed properties of a new fibre.

I should like to close by drawing your attention to the equally astounding results of the impact of these man-made fibres on *textile technology* and, particularly, on the design of textile machinery.

Those 10,000 years of handcraft in textiles which we have charted set the pattern for the power-driven carding, combing, drafting, spinning and weaving machinery of the last 200 years. While the *principles* of reducing a tangled mass of short fibres into a soft web or strand, and doubling and drafting these strands to parallelize the fibres and even the strand; of drafting and twisting the roving into a compact, coherent yarn; of laying up these yarns in parallel arrangement to form a warp through which the filling can be interlaced to form a fabric, are the same for *all fibres*—the practice of these principles has hardened into a set pattern for each of the natural fibres.

The design of cotton preparatory machinery is dictated by the type of impurities, the staple length, the surface characteristics, and other qualities of cotton. The design of a worsted comb is dictated by the great variation in length, the thermoplasticity, the clinging power, and other qualities of wool. The design of a silk creel, or a silk loom, is dictated by the characteristics of silk.

The advent of man-made fibres has freed us not only from dependence upon the limitations of the forms in which these substances occur. For example, while silk is an essentially continuous filament, especially in the form of a single raw thread which is made up of a half dozen or more cocoon threads, it has been put up since time immemorial in skeins of a few ounces. When these are doubled and thrown, the compound thread is usually put up on spools holding from two to six ounces and, therefore, from 15 to 30,000 yards at most. The traditional system of warping silk is from a creel holding from 300 to 600 of these spools. The speed of warping is governed by the friction and drag of the rotating spools and is usually limited to not more than 150 yards per minute.

Compare this to the warping of present-day rayon. A three-pound cone of 55 denier rayon holds 240,000 yards of yarn and averages about two to three knots per cone. A magazine creel holds a double set of these cones so arranged that the yarn comes off over end with no drag whatever. The tail end of each active cone is tied to the beginning of a reserve cone so that the creel is fed continuously and warping is accomplished at speeds of several hundred yards per minute with no stops for refilling the creel and with a uniformity of tension and of spacing on the warp mill far exceeding previous practice.

Consider the subject of *cleanliness and uniformity*. Much of the opening and preparatory processing of cotton is designed to shake out the leaf and seed fragments, dirt, and dust in the raw cotton. Wool must be scoured to remove the grease, then opened and carded and combed to sort out the shorter fibres from the longer ones. Hand sorting of the fleeces themselves by human judgment is the only way of partially separating coarse fibres from fine. All of these preliminary processes add cost, and damage the fibres to some extent. A study of the distribution of length and the distribution of diameter in a

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Cotton Goods Markets

New York.—Trading in cotton gray cloths gradually opened up following the announcement of the revision in the gray cloth ceiling edict. However, trading has been slow and is likely to continue so, because of the scarcity of goods desired by buyers.

Buyers have persistently sought to obtain large amounts of goods but found that the majority of mills were so tightly sold that they were able to supply them only with limited amounts. In other words, the industry is still in a strongly sold position from which it is not likely to emerge for months to come. Naturally, merchants expect that the current tempo of trading may continue for some time or until more production is available for civilian purposes. Indications are that supplies for civilian usage are more likely to be smaller rather than larger over the balance of the year.

Not being able to acquire the yardage they wished, buyers displayed signs of increasing impatience toward commission houses and mills. Adverse criticism grew more vocal, but impartial observers pointed out while some of the anger may have been justified, a great deal of it was not. These observers pointed out that the shortages of gray goods to an important extent represent a continuation of the conditions that prevailed prior to the application of the ceilings. The four or five weeks of inaction following the establishment of price control brought about an accumulation of orders that is now exaggerating the delivery tightnesses. Hence, many and perhaps the majority of mills are not to blame for the present difficulties of trading.

Also, indications are that a minority of mills, perhaps a very small minority, have been interested in ways of taking advantage of the ceiling situation, or to put it another way, of taking advantage of the drum-tight sellers' market. There is nothing greatly surprising about this: it appears to have happened in other industries after price controls were introduced. Touching upon this subject, the National Association of Purchasing Agents recently commented: "Nevertheless, the more reliable concerns are extremely conscious of the time when the present stress will pass and a normal state of affairs from supply-demand standpoint will appear again."

Meanwhile, those that had any surpluses of wanted nearby goods to offer are trying to satisfy customers by allocating the volume. Very often, however, the parceling out of yardage tends to add to buyers' irritation.

Cotton Yarn Markets

Philadelphia.—The first effect of the revision upward of the combed yarn ceiling prices was strengthening of the position of the carded yarn asking prices, but it also has been apparent that neither combed nor carded yarn manufacturers are satisfied with the new prices, and they are not offering freely.

New buying of cotton yarn has increased since the ceiling revision, as compared with the nine weeks preceding, but still not enough to overtake the inquiries, a good many of which have been hanging fire so long that if customers are unable much longer to place their orders, it is stated, there is likely to be curtailment in some lines, at least temporarily. It has become more or less a general condition for yarn mill agents to say their mills are not desirous of news customers. Others are more flexible, but new accounts come last, after regular customers are taken care of.

While the ceiling on prices, either actual or implied, is still viewed as objectionable, the theory of price control and the collateral results—in obstructing a spinner's control over his own affairs—are recently shown to have become more irksome than the actual ceiling prices. Yarn mills that prior to May 26th had sold no yarn above the original ceiling and have sold very little in the last two months are, nevertheless, among those objecting to the current variety of price control, though viewing the OPACS efforts as a sincere effort to avoid inflation without stepping on too many toes.

For example, one of the large yarn mill groups in the South, after conferences with attorneys and other advisers, is said to have come to the conclusion that no contract clause has yet been devised that would protect yarn sellers as long as there is a ceiling over prices, as no "up" clause would satisfy customers unless there is a compensating "down" clause.

It has been suggested that the OPACS should figure out differentials for various counts and then allow spinners a certain differential above the price of raw cotton on any day as the selling price. Spinners claim such a method would be a big improvement over the present system, under which there is a decided trend for the entire sales yarn market to become a spot or nearby market.

They are unwilling to take a stand in most instances for far ahead shipment, believing that under these conditions they take all the risks.

Recent Developments in Synthetic Fibres and Fabrics

(*Continued from Page 37*)

graded quality of wool, or a graded class of cotton, reveals a wide range of both. In flax, the variation in length and in fineness is even greater.

Rayon staples are clean and free of all impurities. They are cut to any uniform exact length desired. For a given denier, there is, of course, some variation in fineness, but the great majority of the fibres are very close to the nominal denier. Because of the absence of dirt and the uniformity of fineness and length, existing cotton and worsted mills can eliminate some of the steps when spinning the rayon staples. The makers of spinning machinery have grasped the new viewpoint and are studying two question: firstly, "What is the focal length and diameter distribution of staple fibres to make a good yarn?" and, secondly, "What is the simplest and most economical equipment for converting such fibres into yarn?" Several systems using staple lengths of 2½" to 3¼" have already been described in which the steps of processing have been reduced to a half dozen.

This trend of thought leads, of course, to another which has been in many men's minds ever since staple fibre has been made by cutting up continuous strands to form a tangled mass of short fibres which subsequently have to be carded out and parallelized again. This question is: "How can a strand of continuous filament be converted directly and continuously into a spun yarn?" The patent literature and the trade press are full of attempted answers to this, and there is little doubt that it will be solved practically on a large scale. Several processes have been used to a limited extent.

The problem is to produce short fibres from the continuous strands in such a way that the fibre ends are distributed at random along the strand and without destroying the parallel arrangement. Such a strand is a roving which can then be drafted and twisted by the usual spinning methods to form a yarn.

One patented method breaks the fibres by stretching the continuous strand or tow between two sets of rollers running at different speeds. This results in a completely random distribution of fibre lengths and in fibres whose physical properties have been changed somewhat by the tension. Other systems combine diagonal cutting or the staggered cutting of several strands with subsequent combing and drafting through a gill box type of mechanism or some other method of keeping the fibres in parallel arrangement.

If you have inventive genius, you will find this a fascinating problem. It will probably be solved first for coarse deniers and coarse yarns. However, the versatility of the traditional system of carding, drafting, and spinning; its ability to spin fine yarns of great evenness; and the facility with which blends of different fibres and of different deniers of the same fibre can be handled; will probably preserve it for a long time despite the obvious economy of the tow-to-yarn method.

In the field of fabric manufacture, there are two recent developments of great interest for the manner in which they have broken with textile tradition.

One of these is the electrostatic method of producing pile fabrics. Cut flock of rayon or natural fibres in lengths of from 0.025 to 0.060 inches is fed into a space

between two highly charged electrodes. Simultaneously, a length of fabric coated on the upper side with a suitable adhesive is moved across the face of the lower (positive) electrode. The fibres first stand erect and are then propelled endwise at high speed towards the positive electrode. Their high velocity causes them to become embedded to from one-half to one-third of their length in the cement and their highly charged condition not only keeps them rigid, but spaces them evenly because of their mutual repulsion. A pile density as high as 300,000 fibres per square inch has been attained, which is considerably greater than can be made by any traditional system of weaving.

The second example of unique fabric construction is the making of felt by mixing a certain proportion of plastic fibre, such as vinyon or plasticized acetate staple, with another fibre or fibres and felting the mass by subjecting it to controlled heat and pressure. This binds the plastic fibres to one another, and so traps the other fibres into an interlaced sheet. This process eliminates many of the complicated steps and uncertainties of felt-making. It permits of the use of non-felting fibres in felts. By control of fibre blend and pressing conditions, a range of felts from a very soft, porous filter material to a hard, tile-like wall-board can be obtained.

These few examples of the new ways in which yarns and fabrics are being made will serve to illustrate the impact of the new textile philosophy on textile technology.

In closing, I would like to remind you that those ten thousand years of textile history which we have strung so easily about this room are a priceless heritage to be treasured and used every day as we meet the challenge of our new philosophy and technology of textiles. Our homes, our stores, and our museums are full of the beautiful materials which man has created with the natural fibres. The *principles* of converting fibre to yarn and yarn to fabric will always hold. I beg that you use this heritage of textile tradition, but not be restricted by it.

If you would meet the challenge of the textile world in which you are going to spend your lives, you must learn the principles of fibre structure, the principles of converting a disorganized mass of fibres into an organized yarn, the principles of interlacing fibres or yarns to form a fabric by felting, by knitting, by weaving. This is the foundation which these ten thousand years have prepared for you. The last twenty years have opened up a new philosophy of textiles. It is up to you to go from the known to the unknown—from the properties of the fibres which you have at your disposal to the properties which you would like to have in fibres not yet in existence—from the processes which the past has made available to new processes made possible by new fibres.

Management in the Defense Program

(*Continued from Page 9*)

more than any mother or father. It was a wise policy. I have never regretted it. I was a great man to my employees. They told the local community and the local community told the world. I did not need a public relations program or a public relations manager. In fact, I spent no money for such work, nor did I ever have to worry about what the community thought of me.

Pardon this personal reference but it is highly significant. Your workers and the people who serve with you are the greatest builders or barriers of good will in the entire public relations program and if they do not help you, you cannot be helped.

The public watches them and listens to their reports on industrial conditions in your plant more than they do you. If there is a difference between what you tell and what they tell, the public will believe them. I make this statement as true in the normal operations of your plant. Of course when strikes and emotional conflicts occur reason is cast aside and exaggerations occur.

Industry cannot buy public approval with money. It cannot buy public respect and public confidence with money. All of these things must be bought and paid for in policies respecting human rights—the inalienable rights of mankind.

If industry is not respected it is because management has not pursued policies that would gain respect, and if it once had respect and lost it, it was lost through bad policies of human relationships.

It is an evident fact that no man is as important as he thinks he is. He is only as big and important as those with whom he is associated *think* he is. I did not use the word *say*, I used the word *think*. There is a difference between *thinking* and *saying*. Often there is too much difference between saying and thinking. A "yes man" does not always say what he thinks. For that reason I am always more interested in what people really think of me than what they say of me.

In streamlined industry with employment opportunity and job security so hazardous, employers might sometimes be shocked by what some of their people think of them, rather than chesty and self-contained because of what their "yes men" say to them.

Managers must have some means of finding out really what their people think of them and their policies. They must live such a life of fairness and justice that their people will not be afraid to discuss policies constructively with them. They must have policies such that all people in the organization can appreciate that they are contributors to its success or failure and that success or failure does not lie within the brain of any one man. Such a policy will cause self pride and pride of job and industrial family life and will result in favorable comment on the part of all and express itself in public good will.

In a public relations program, the basis or point of origin is the industry and the local community. Nothing can be done until this area is cleaned and clarified and consolidated.

Public relations do not constitute a serious problem if industry has solved its human relationships with its own people and its local community. It is a futile undertaking until this is done. The next frontier for industry is not its production frontier or its financial frontier; it is its social frontier; and I am using this word in its broad significance.

In closing, I would like to state that I am fully aware of the fact that our world is material, therefore, our philosophy is largely a material philosophy, but I also realize that there are spiritual and cultural values which must be recognized in industrial relationships before there can be a complete comprehension of material values. It is the cultural and human appreciation of man to which

I specifically refer in this discussion. In emphasizing this statement, I have chosen a quotation from "Man, the Unknown," by Alexis Carrel:

"We must liberate man from the cosmos created by the genius of physicists and astronomers, that cosmos in which, since the Renaissance, he has been imprisoned. Despite its stupendous immensity, the world of matter is too narrow for him. Like his economic and social environment, it does not fit him. We cannot adhere to the faith in its exclusive reality. We know that we are not altogether comprised within its dimensions, that we extend somewhere else, outside the physical continuum. Man is simultaneously a material object, a living being, a focus of mental activities. His presence in the prodigious void of the intersidereal spaces is totally negligible. But he is not a stranger in the realm of inanimate matter. With the aid of mathematical abstractions his mind apprehends the electrons as well as the stars. He is made on the scale of the terrestrial mountains, oceans and rivers. He appertains to the surface of the earth, exactly as trees, plants, and animals do. He feels at ease in their company. He is more intimately bound to the works of art, the monuments, the mechanical marvels of the new city, the small group of his friends, those whom he loves. But he also belongs to another world. A world which, although enclosed within himself, stretches beyond space and time. And of this world, if his will is indomitable, he may travel over the infinite cycles. The cycle of beauty, contemplated by scientists, artists and poets. The cycle of love, that inspires heroism and renunciation. The cycle of grace, ultimate reward of those who passionately seek the principle of all things. Such is our universe."

The day has come to speed the work of our renovation in orders that we may save the democracy of industry. For the first time we have at our disposal the gigantic strength of physical and social science in working out our program. Will we utilize this knowledge and this power? It is our only hope of escaping the fate common to all great civilizations of the past. Our destiny is in our hands. On the new road, we must now go forward.

In making these closing statements, I am not trying to arrive at a beautiful and theoretical finale. I believe that industry is making an honest effort to adapt itself to the needs of this changing world and will continue to increase its ability and influence in national social progress. I believe that soon, along with the electrical engineer, the mechanical engineer, and all of those types that have so recently made their advent into industrial life, there will come the societal engineer and the breadth and scope of industry will be greatly and profitably increased in its social expressions. The broad principles discussed in this article outline a way for management to travel and indicate my hope and my belief in his willingness and ability to discharge his responsibility. In the midst of so much pessimism, I am still an optimist. I still have faith in industry, in my government and in its people. We must not become unduly alarmed. We must do the needful—even more than that. We must not fail. We cannot fail. This nation is the last hope for a democracy of free people. The South is the last area and the strongest area in preserving these rights. Management must seriously consider the implications contained in this article so that we may continue to live in a land of liberty and enjoy the social relationship of man in its complete fruition.

Overseer's Club Banquet At Dallas Cotton Mill

Shown below is the group present at a recent banquet of the Overseer's Club at the Dallas (Tex.) Cotton Mill.

Included in the photo are Truit Wilson, Ernest Lowery, C. C. Lowery, A. T. McGuire, Dr. Jos. Holt, Clay Jones, Robert Harrison, R. S. Jamieson, Tony Byrd, Cleo Byrd, Harry Filiere, Otis Williams, Ralph Newman, Harold Knight, H. G. McGuffey, C. E. Elrod, L. H. McKnight, T. W. Yates, G. D. Miller, Will Burris, Izzie Inman, Chas. Moak, A. E. Dyson, E. S. Cunningham, F. W. Brunken, Jack Craugh, Warren Hall, Jack Weir, A. B. Hart, A. W. Potts, Jno. Douglas, R. S. Rollinson, George Blackburn, Ed. Bearden, L. Cole.

Exports of Cotton Drop $118,000,000 in First Quarter

Washington, D. C.—War's influence on American foreign trade is analyzed in a report just issued by the foreign department of the U. S. Chamber of Commerce, setting forth the value and volume of the nation's principal exports and imports for the first quarter of the current year.

The report shows that exports to the British Empire destination increased 55 per cent, while those to all other countries declined 45 per cent.

United States imports also were influenced by world-wide war conditions, the report showing an increase in imports from the British Empire of 23 per cent. Imports from non-British countries gained only 2 per cent during the same period.

Contrasted to the heavy exports recorded to South America during the first three months of 140, the trends in the first quarter of this year fell off, a 19 per cent decrease being registered. Imports from South America revealed a brighter foreign trade trend, however, as an expansion of 41 per cent over last year's first quarter was noted.

Total United States exports declined by the amount of 82 million dollars, a figure that represents a 7.7 per cent decrease when compared with the corresponding period last year. Cotton is the commodity chiefly responsible for the falling off. The report shows that cotton exports declined 118 million dollars, half again as much as the total export decrease.

Among the factors restricting wider export trade expansion, outlined in the reports foreword written by Edward L. Bacher, manager of the chamber's foreign commerce department, are: Increased diversion and requisitioning of shipping, voluntary shipping priorities and the gradually expanding U. S. Government control of exports.

Southern Sources of Supply

For Equipment, Parts, Material, Service

Following are the addresses of Southern plants, warehouses, offices, and representatives of manufacturers of textile equipment and supplies who advertise regularly in TEXTILE BULLETIN. We realize that operating executives are frequently in urgent need of information, service, equipment, parts and materials, and believe this guide will prove of real value to our subscribers.

ACME STEEL CO., 2838 Archer Ave., Chicago, Ill. Sou. Office and Warehouse, 603 Stewart Ave., S.W., Atlanta, Ga., F. H. Webb, Dist. Mgr. Sou. Sales Reps.: Frank G. German, 1617 Beverly Drive, Charlotte, N. C., Phone 3-3293; G. R. Easley, 107 Manly St., Greenville, S. C., Phone 1610; William G. Polley, 937 Cherokee Lane, Signal Mountain, Tenn., Phone Chattanooga 8-2635; John C. Brill, 309 Magazine St., New Orleans, La., Phone Magnolia 5859. Warehouses at Atlanta, Ga., Greenville, S. C., New Orleans, La.

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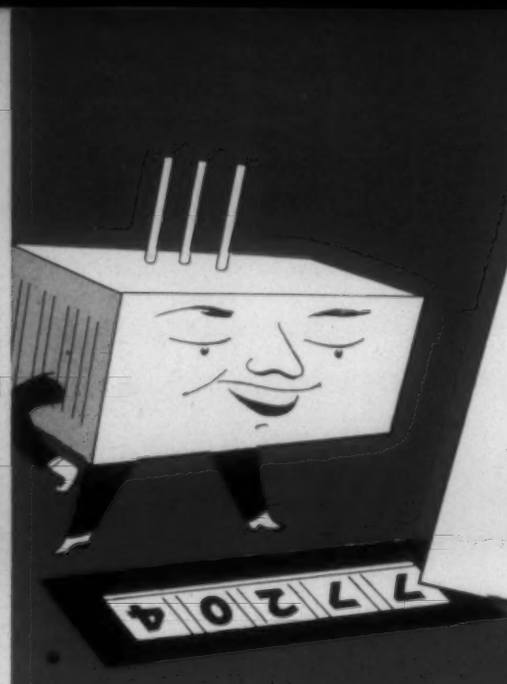

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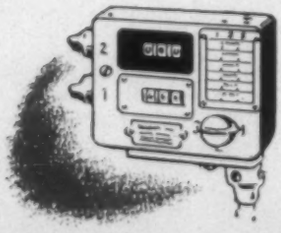

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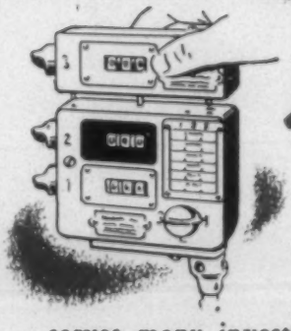

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